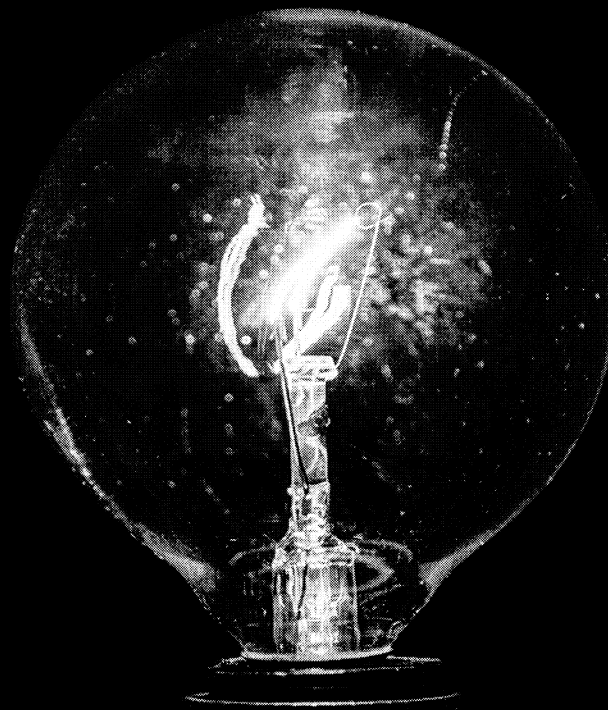


**Deloitte.**







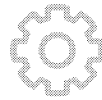

## **Chatbot Experiment Overview**

CARM Innovation Program

**DRAFT**

INTRODUCTION

Table of contents

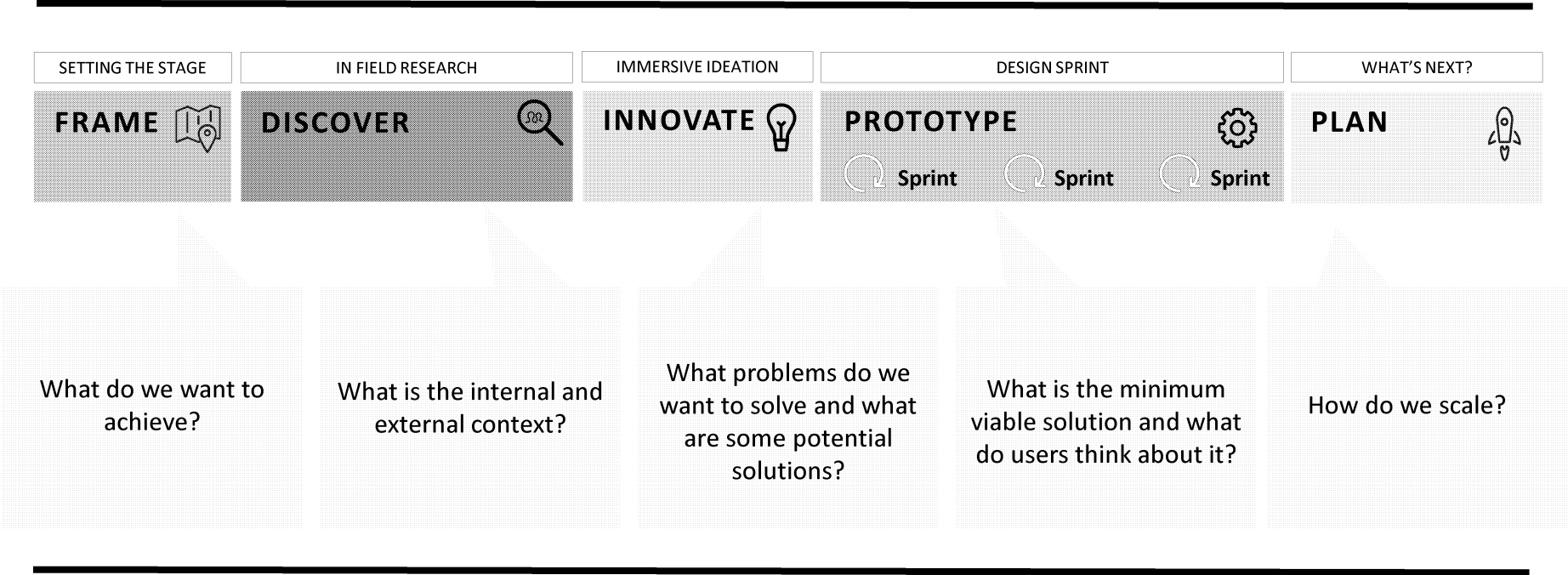
|   |                            |    |
|---|----------------------------|----|
|    | A Reminder of our Approach | 3  |
|    | Frame the Objective        | 5  |
|    | Discover the User          | 13 |
|   | Innovate the Solution      | 17 |
|  | Prototype the Solution     | 22 |
|  | Plan for Launch & Scale    | 45 |

# **A Reminder of our Approach**

**DRAFT**

A REMINDER OF OUR APPROACH

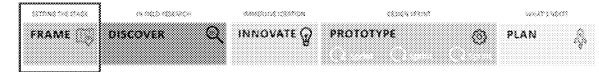
We used our five-step experimentation process to explore this opportunity



# Frame the Objective

DRAFT

## FRAME THE OBJECTIVE



CBSA spends significant time liaising with trade chain partners (TCPs) on FAQ-type and account-related questions, resulting in lost productivity and a poor experience

TCPs don't know where to go to get their questions answered and have to interact with multiple groups to get answers to common questions

TCPs spend a lot of time enquiring about the importation process and managing their accounts

CBSA spends significant resources addressing TCP enquiries

*These are the problems we're trying to solve*

Importers and brokers

Focus on high volume, low complexity enquiries

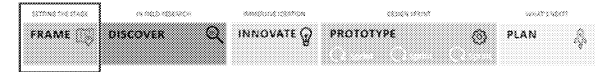
Enable TCPs to get answers to their questions easily and quickly

Improving the importer and broker experience and reducing the volume of calls and emails to CBSA

*This is the objective of the experiment*

DRAFT

## FRAME THE OBJECTIVE



TCPs don't know where to go to get their questions answered and have to interact with multiple groups to get answers to common questions

When TCPs have a question, they have various CBSA contact options...

### Border Information Service (BIS)

*Provides general information on CBSA programs to external clients*

### Technical Commercial Client Unit (TCCU)

*Supports external clients with technical issues related to receiving electronic statements*

### Finance and Administrative Systems and Policies (FASP)

*Supports trade chain partners on technical issues related to accounts receivable during the import process*

Contact us

#### Border Information Service

The Border Information Service (BIS) is an automated telephone service that answers incoming calls and provides general information on CBSA programs, services and initiatives through recorded scripts.

Service in English or French

| Calls within Canada         | Calls outside Canada  | TTY within Canada  |
|-----------------------------|---|--|
| Toll-free<br>1-800-461-9999 | Long distance charges apply<br>1-204-983-3500<br>1-506-636-5064 | For those with hearing or speech impairments<br>1-866-335-3237 |

#### Technical Issues with Electronic Statements

For technical issues related to receiving electronic statements, contact the CBSA's Technical Commercial Client Unit (TCCU) by phone at 1-888-957-7224 or by the TCCU mailbox.

#### Request to Receive Electronic Statements

Non-Account Security importers who wish to receive electronic daily notices or monthly statements of account must request and complete an application by contacting the CBSA's Technical Commercial Client Unit (TCCU) by phone at 1-888-957-7224 or by the TCCU mailbox.

#### General Information

For general information regarding commercial payments and accounting, contact the Border Information Service at 1-800-461-9999.

From outside Canada call 204-983-3500 or 506-636-5064. Long distance charges will apply. Agents are available Monday to Friday (08:00 – 16:00 local time, except holidays).

TTY is also available within Canada at: 1-866-335-3237.

ARL Support Offices

#### Account Specific Information

For account specific information regarding your account or statement of account, contact the CARM mailbox.

To enhance the process of prioritizing, tracking and resolving ARL related requests, the following standard subject lines are required for emails to the CARM mailbox.

Total number of BIS commercial calls requiring human interaction:  
~235,000

85%  
of all  
enquiries

Total number of TCCU enquiries:  
~28,000

10%  
of all  
enquiries

Total number of ARL enquiries:  
~13,000

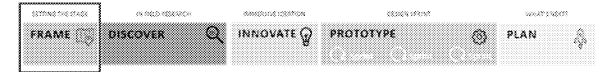
5%\*  
of all  
enquiries

\*Represents the total number of commercial enquiries to BIS, TCCU and FASP

© Deloitte LLP and affiliated entities.

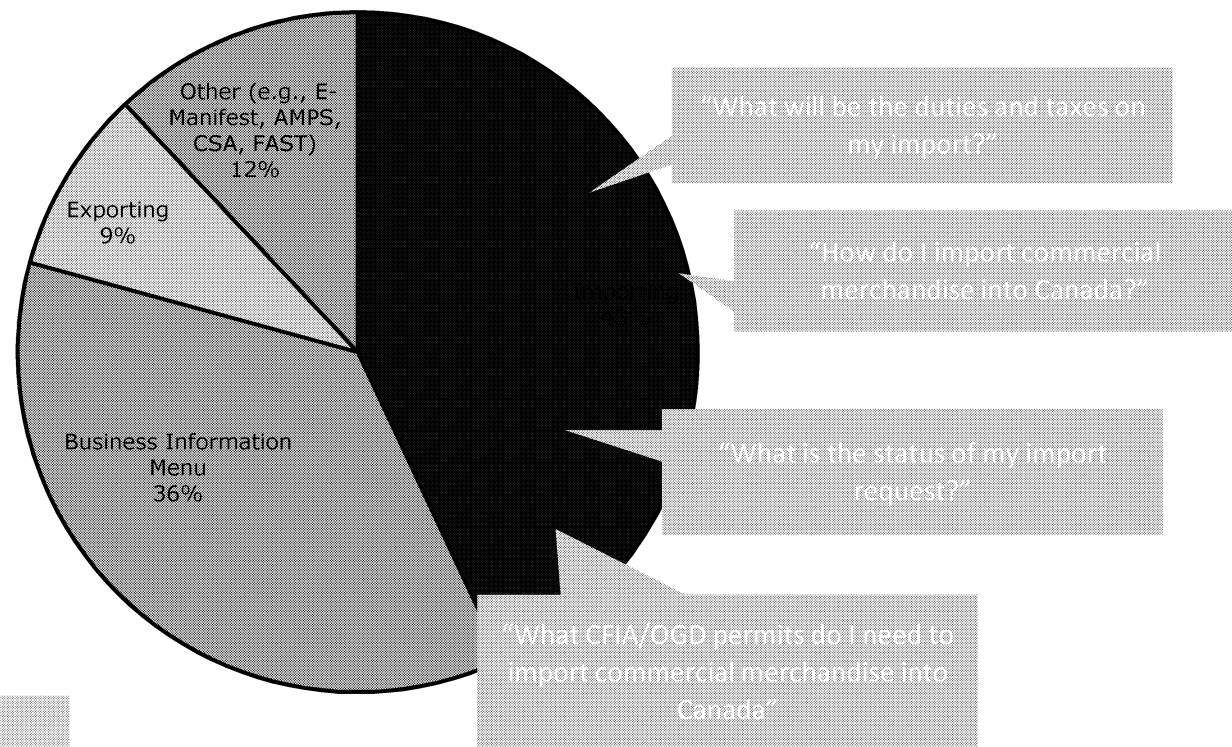
**DRAFT**

## FRAME THE OBJECTIVE



TCPs spend a lot of time inquiring about the importation process and managing their accounts (1/3)

**BIS Enquiries (Jan - Dec 2017)**



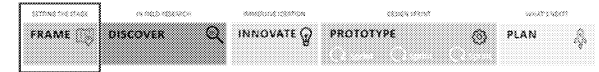
"Nearly 99% of calls are FAQ type questions. If they aren't, they are sent to another team that provides more comprehensive support."  
- BIS support team

**Total number of BIS commercial enquiries requiring human interaction: ~235,000**



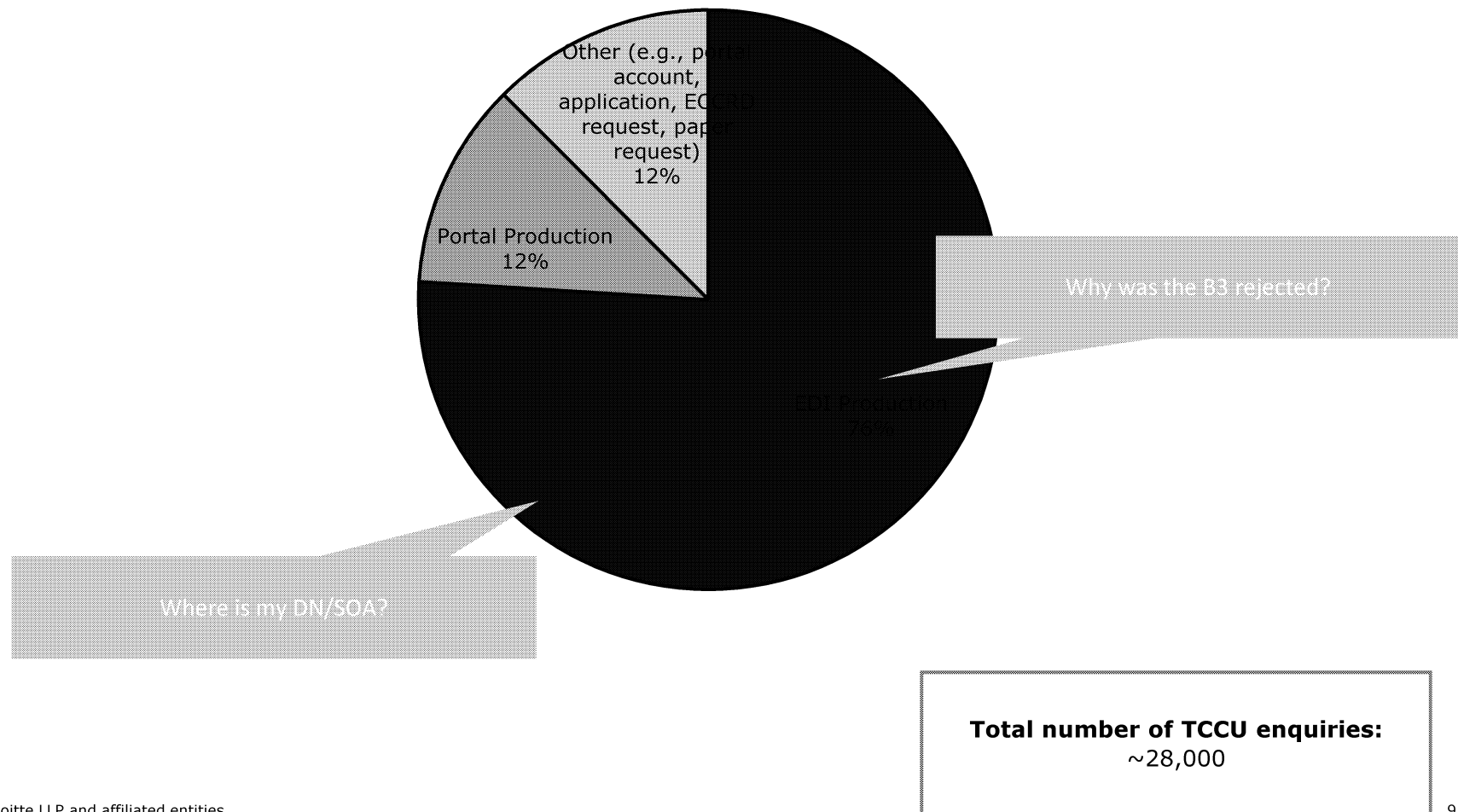
**DRAFT**

## FRAME THE OBJECTIVE



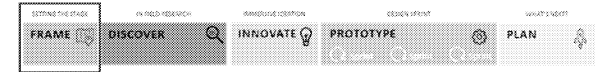
TCPs spend a lot of time inquiring about the importation process and managing their accounts (2/3)

**TCCU Enquiries (July 2017 - 2018)**



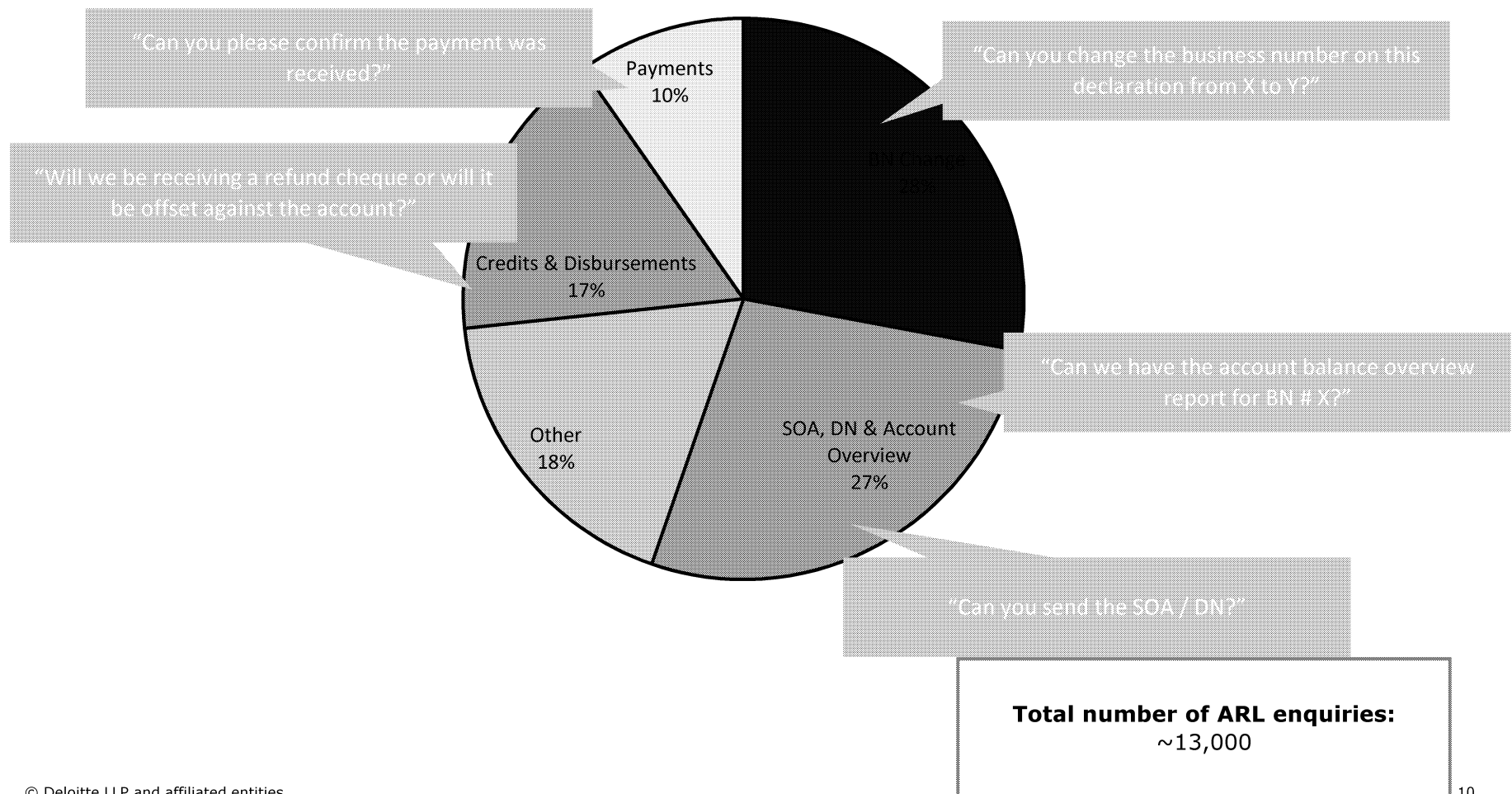
**DRAFT**

## FRAME THE OBJECTIVE



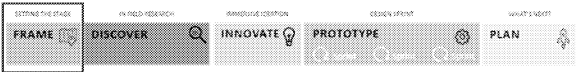
TCPs spend a lot of time inquiring about the importation process and managing their accounts (3/3)

### ARL Support Enquiries (July 2017-2018)






DRAFT

# FRAME THE OBJECTIVE



## CBSA spends significant resources addressing stakeholder enquiries

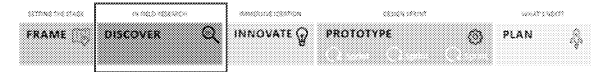
| BIS  |  |   |
|--|--|---|
|  <b>235,137</b><br><i>Total number of commercial BIS calls and emails requiring human interaction in the last 12 months</i> | <b>32 FTE</b><br><i>Total FTE handling commercial BIS calls and emails</i> | <b>\$1 - 2M<sup>1</sup></b><br><i>Total possible savings per year</i>     |
| TCCU   |  |   |
|  <b>27,693</b><br><i>Total number of TCCU enquiries over the last 12 months</i>   | <b>9 FTE</b><br><i>Total FTE handling enquiries in the TCCU group</i>      | <b>\$225 – 450K<sup>2</sup></b><br><i>Total possible savings per year</i> |
| FASP   |  |   |
|  <b>12,859</b><br><i>Total number of FASP enquiries over the last 12 months</i>   | <b>8 FTE</b><br><i>Total FTE handling enquiries in the FASP group</i>      | <b>\$200 - 600K<sup>3</sup></b><br><i>Total possible savings per year</i> |

<sup>1</sup> Estimated BIS savings were calculated based on number of enquiries, minutes of FTE effort spent on calls and FTE salary based on the number of assumed enquiries (high and low) that could be supported by a chatbot (detailed calculations included in Appendix A). <sup>2</sup> <sup>3</sup> Estimated TCCU and FASP savings were calculated by taking FTE count (and salary) and assuming the percentage of enquiries (high and low) that would be supported by a chatbot since the length of call could not be generalized due to the variety and complexity of enquiries (detailed calculations included in Appendix B and C)

# Discover the User

**DRAFT**

## DISCOVER THE USER



Trade chain partners are users of enquiry channels within CBSA, and they are serviced by CBSA client service teams (BIS, TCCU, FASP)

Trade Chain Partners

CBSA  
Client Service Teams

*Our users*

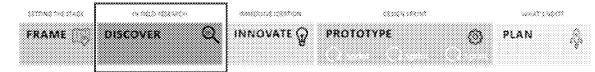
Trade chain partners are focused on understanding the importation process and the transactions being posted to their account(s)

Client service teams spend significant time on high volume, low complexity questions

*Key insights from our users*

**DRAFT**

## DISCOVER THE USER



TCPs are focused on understanding the importation process and the transactions being posted to their account(s) while client service teams spend significant time on high volume, low complexity questions

### General information

*TCPs want to know about various aspects of the importation process, such as tariff classification, import accounting, requirements and restriction of importing commercial goods taxes and duties, among others. These questions are in high volume and are often generic and FAQ-type questions.*

"What OGD permits do I need to import X commercial items into Canada?"

### Status of requests & account info

*TCPs want to know about the status of their import requests, forms (e.g., B3 rejects), payments, refunds or help with issues with EDI production and BN mis-entry. TCPs want to be updated on information they've submitted to CBSA for review or action. More transparency for end users would minimize enquiries to CBSA.*

"What is the status of my import request?"

### Statement of account & daily notice

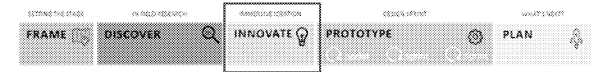
*Many importers are simply looking to understand the status of their account. There is complexity around getting immediate access to their account to track amounts owed and payments due. Greater functionality for end users would allow for faster access to their account information and less enquiries to CBSA.*

"We did not receive the statement of account for BN#X. Please advise on the status of the SOA."

# Innovate the Solution

**DRAFT**

## INNOVATE THE SOLUTION



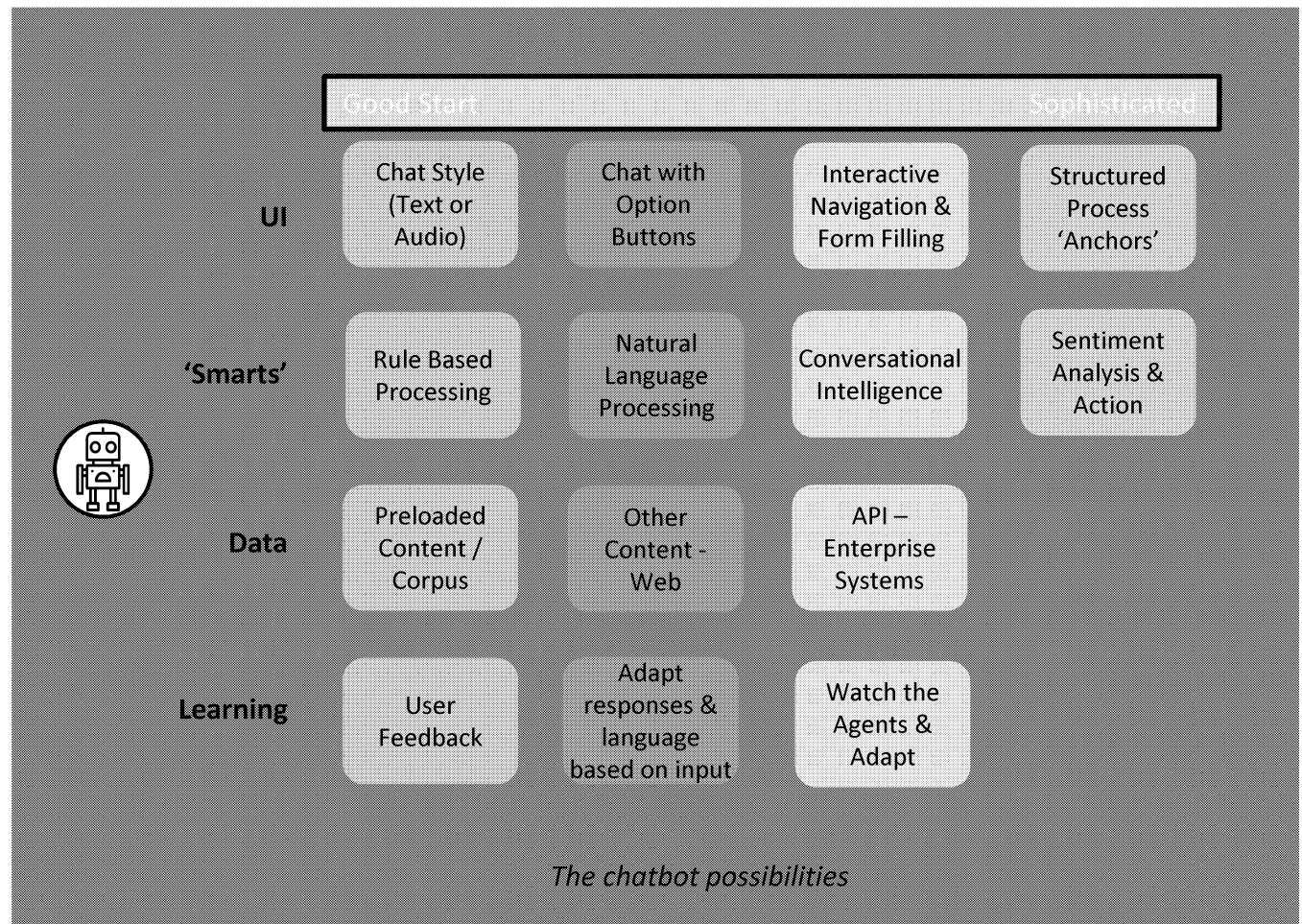
CBSA is interested in exploring the use of a chatbot to reduce call and email volume and to improve user experience

Improve the service experience for trade chain partners

Reduce the amount of time that trade chain partners spend communicating with CBSA

Reduce the workload of CBSA client service teams

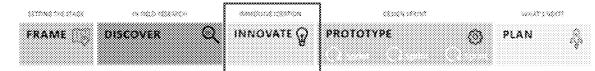
*Desired outcomes*









**DRAFT**

INNOVATE THE SOLUTION



## Improve the service experience for trade chain partners

### A chatbot results in a better user experience by:

-  Allowing **immediate access** to answers for users
-  Facilitating an easy interaction through **natural language** in both **English and French**.
-  Creating an **integrated user support channels** that allow for seamless transition between agents or teams
-  Providing a **consistent user experience** during each interaction

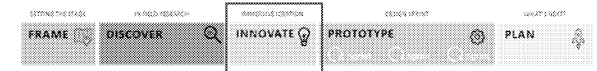
### Case Study



Chatbots allow organizations to better serve users through a user-centric platform that allows them to listen to users and better meet their needs.

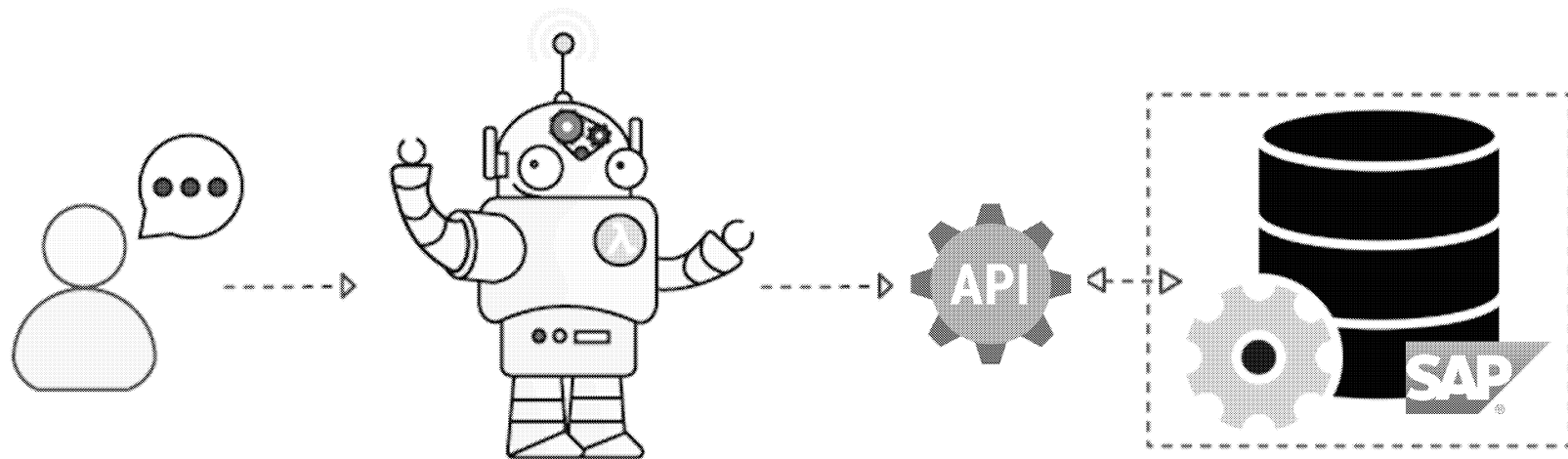
**85%** of client interactions will be managed without a human by 2020

**DRAFT**



## INNOVATE THE SOLUTION

# Reduce the amount of time that trade chain partners spend communicating with CBSA



*A user converses with the Chatbot to request information or actions.*

*The Chatbot can understand user requests in natural language. It can reply with answers, perform actions, ask for more inputs, or respond with error handling prompts.*

*The Chatbot fulfills user requests by triggering web services in SAP via the API. The API then retrieves the requested information or performs other types of actions.*

## Case Study

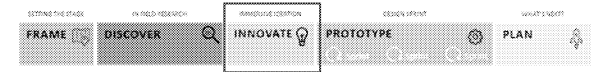


Swedbank introduced a human-like, conversational AI chatbot with self-serve capabilities to respond to user inquiries

**78%** of customer enquiries were resolved on first contact

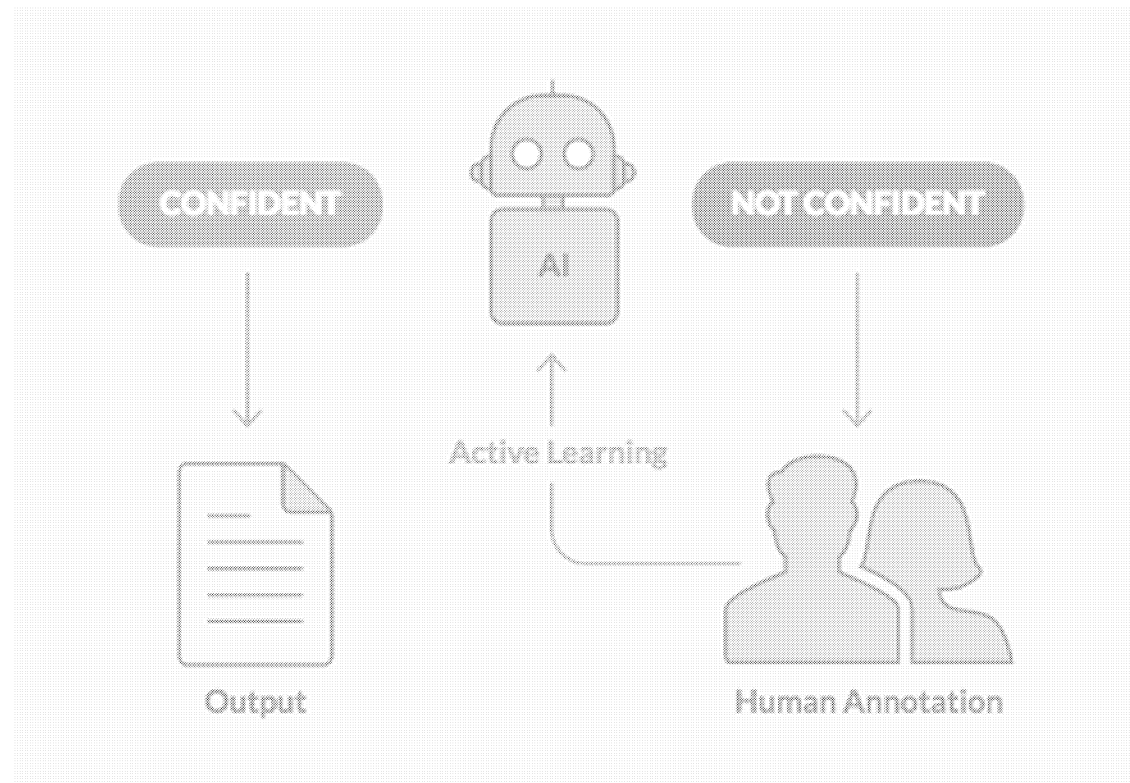
**DRAFT**

## INNOVATE THE SOLUTION



# Reduce the call & email volume, and know when to escalate to humans for help

A chatbot will help trade chain partners get things done faster than they do today, but there will be times where the request from the end user is not something the bot is capable of handling. In these situations the bot must escalate to a human agent.



## Case Study



Bradesco introduced an AI chatbot in 2014 to assist with internal employee queries, and they were diligent in managing, refining and scaling it's response capabilities

**90%** of help desk calls were eliminated within 2 years

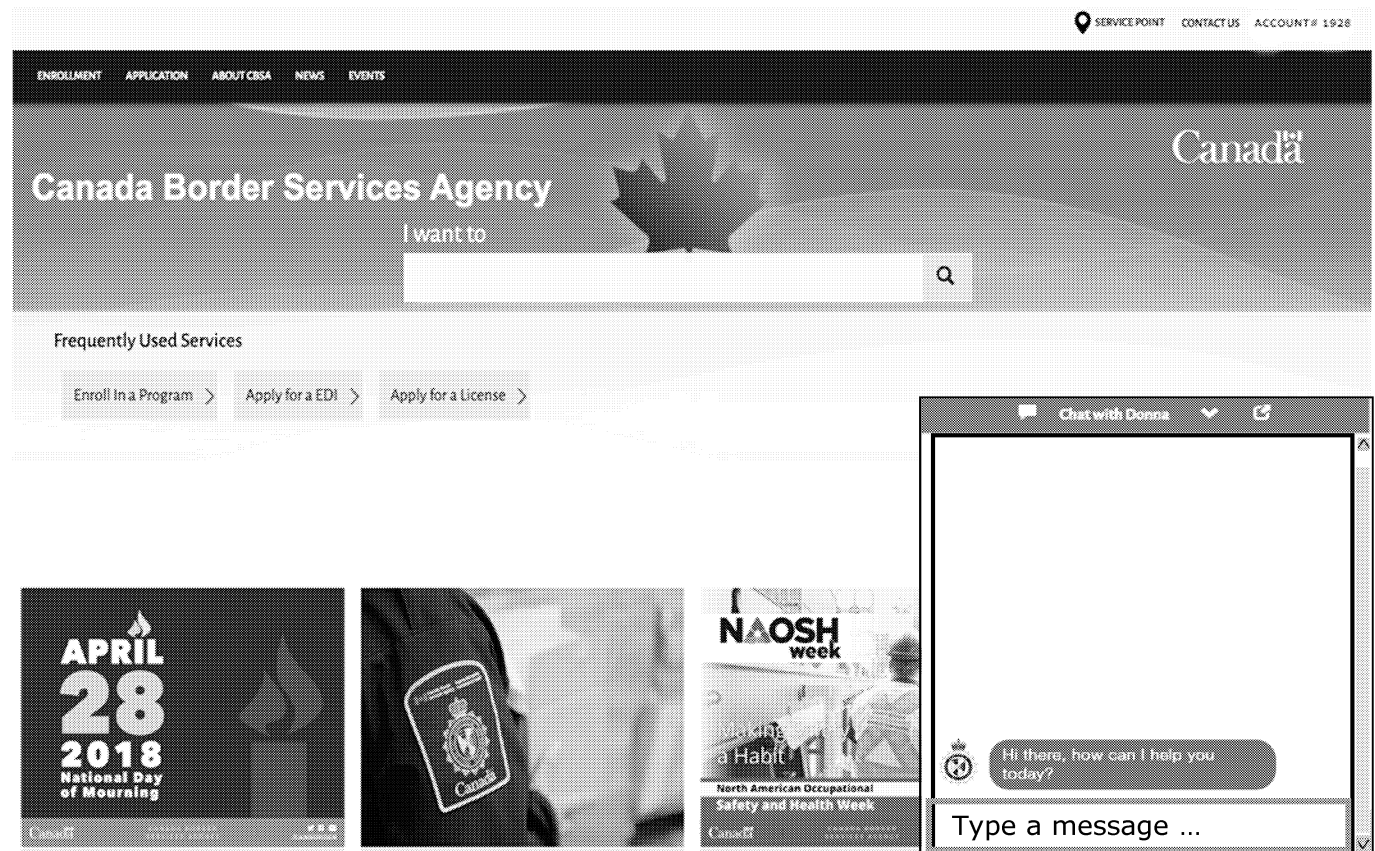
# Prototype the Solution

**DRAFT**

## PROTOTYPE THE SOLUTION

The chatbot solution will build on the currently proposed CARM solution

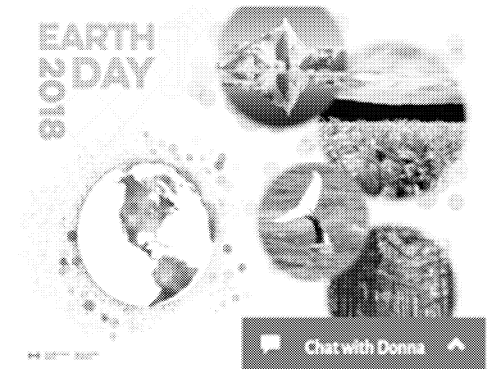
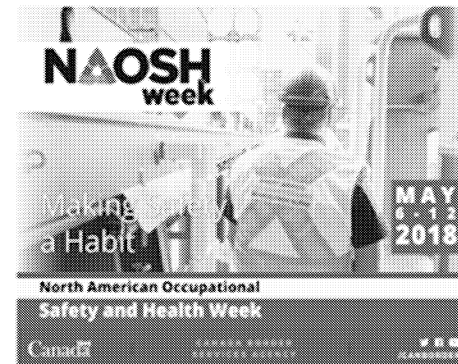
For the CARM program one of the biggest new capabilities being delivered is an online portal for trade chain partners to interact with. A chatbot would be a **logical extension** of this portal to allow trade chain partners to quickly access disparate information and perform various transactions with the agency **without navigating through pages**.



# Illustrative Example (Mocked):

**DRAFT**

## PROTOTYPE THE SOLUTION



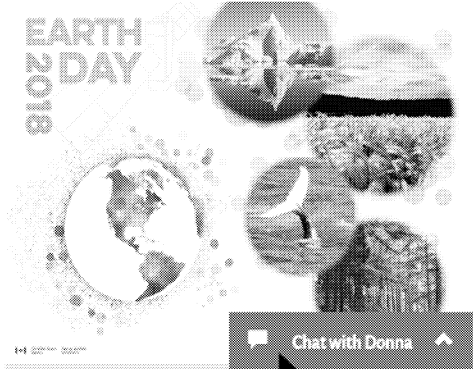
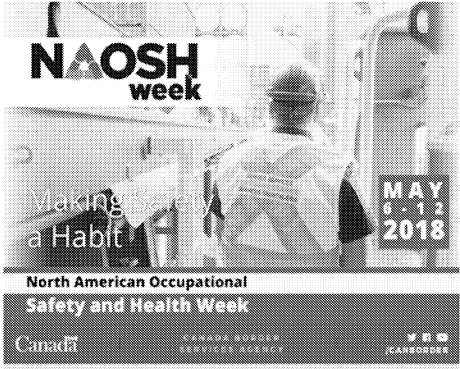


**DRAFT**

PROTOTYPE THE SOLUTION



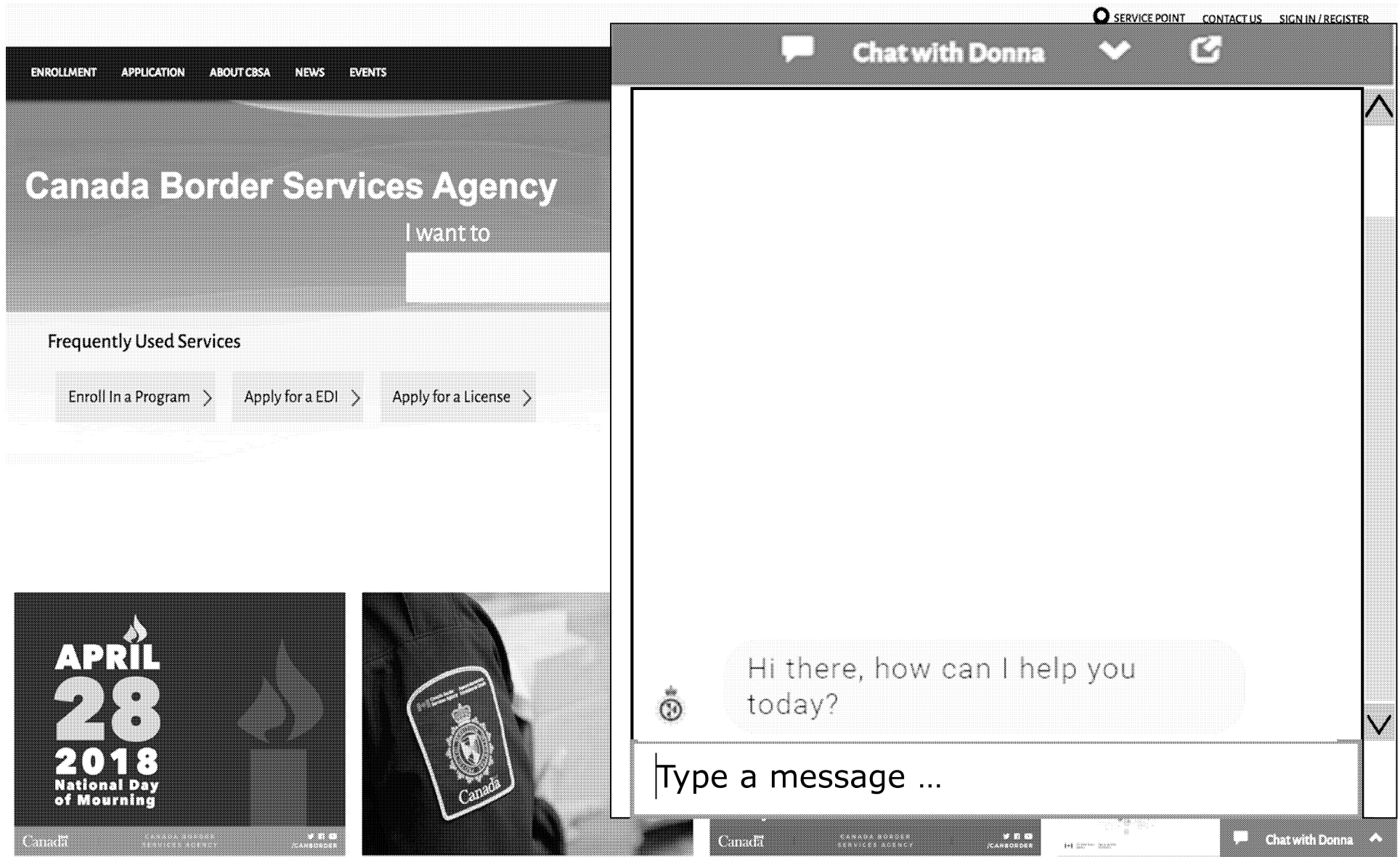
© Deloitte LLP and affiliated entities.





**DRAFT**

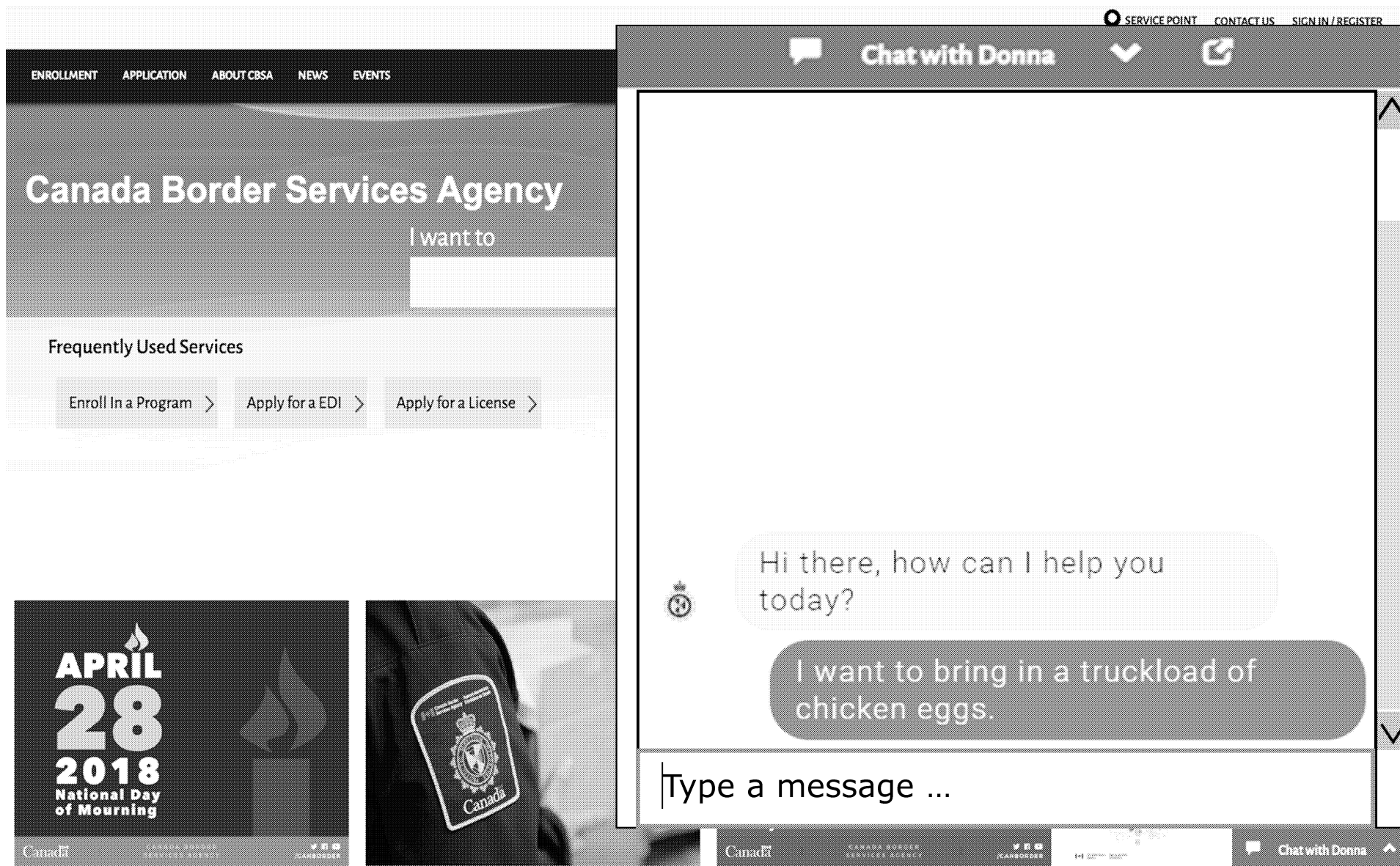
## PROTOTYPE THE SOLUTION



© Deloitte LLP and affiliated entities.

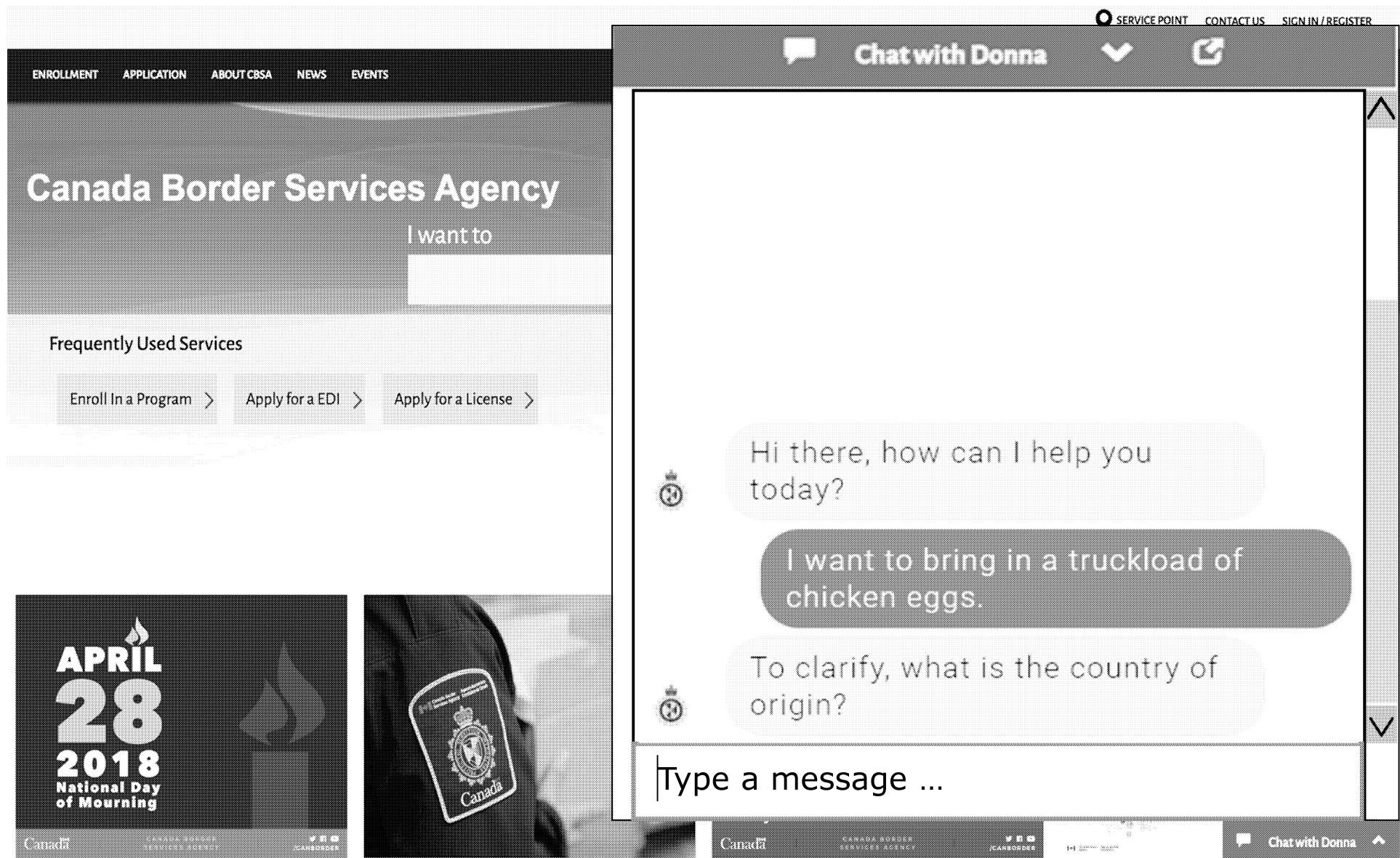
**DRAFT**

## PROTOTYPE THE SOLUTION



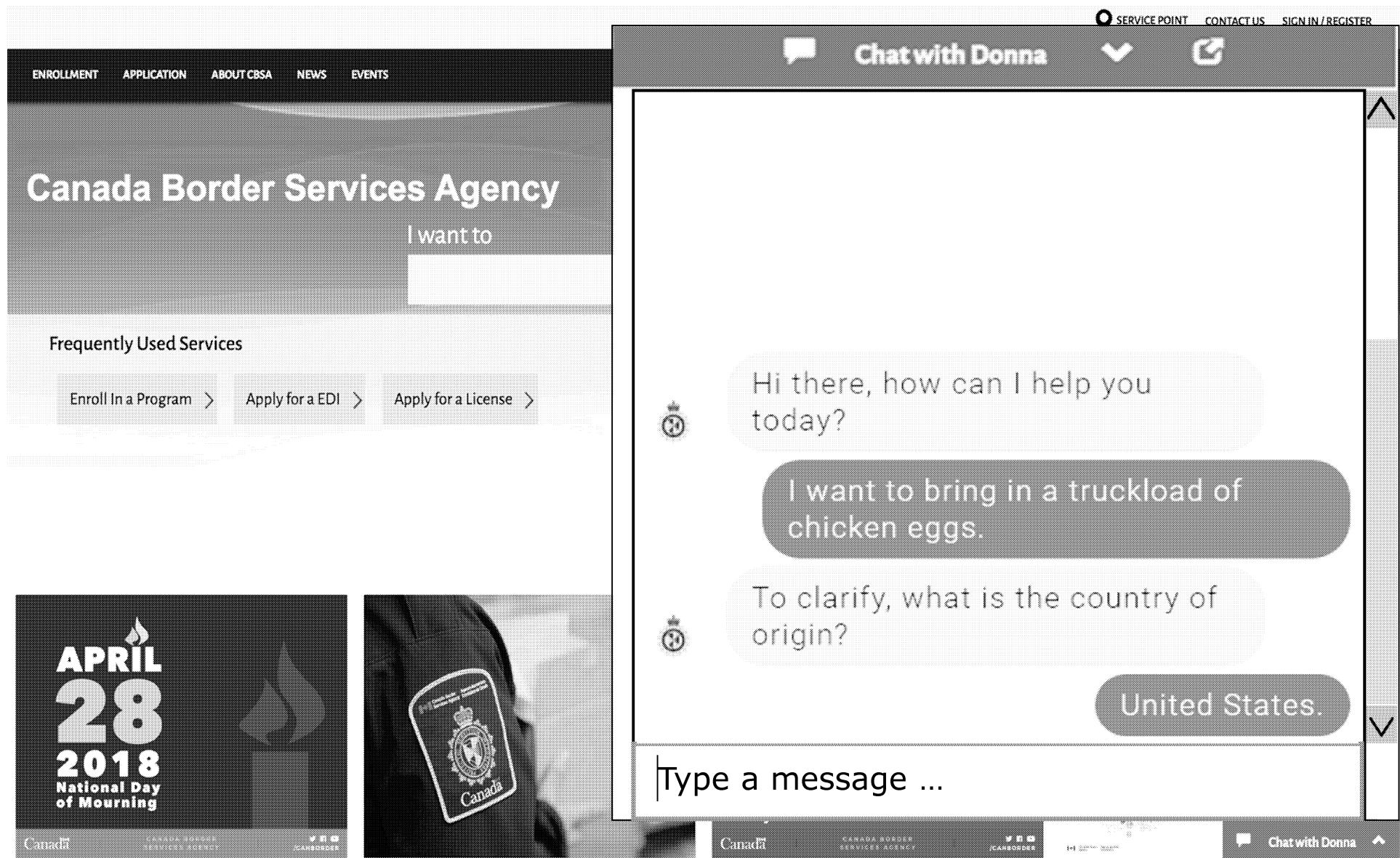
**DRAFT**

## PROTOTYPE THE SOLUTION



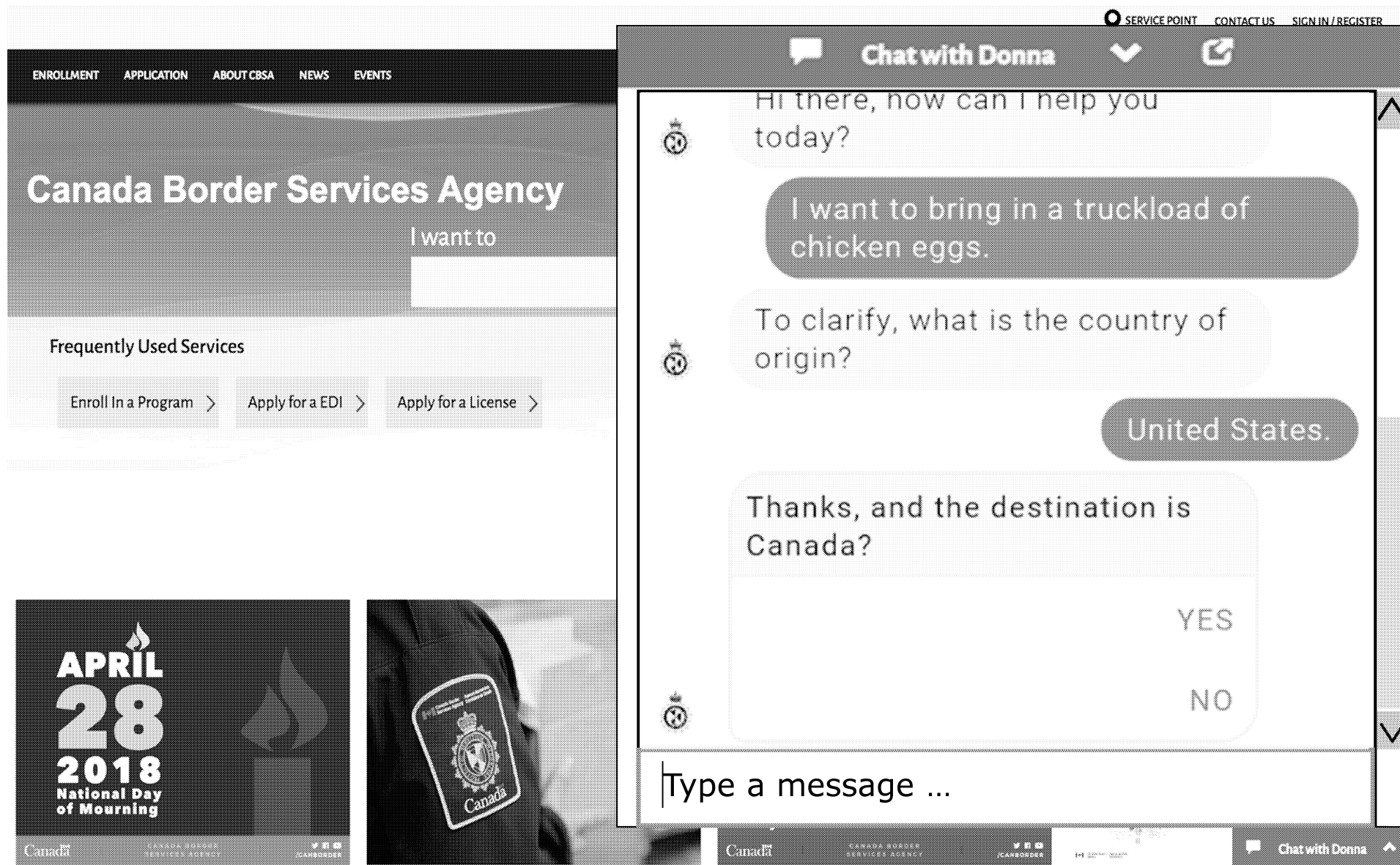
**DRAFT**

## PROTOTYPE THE SOLUTION



DRAFT

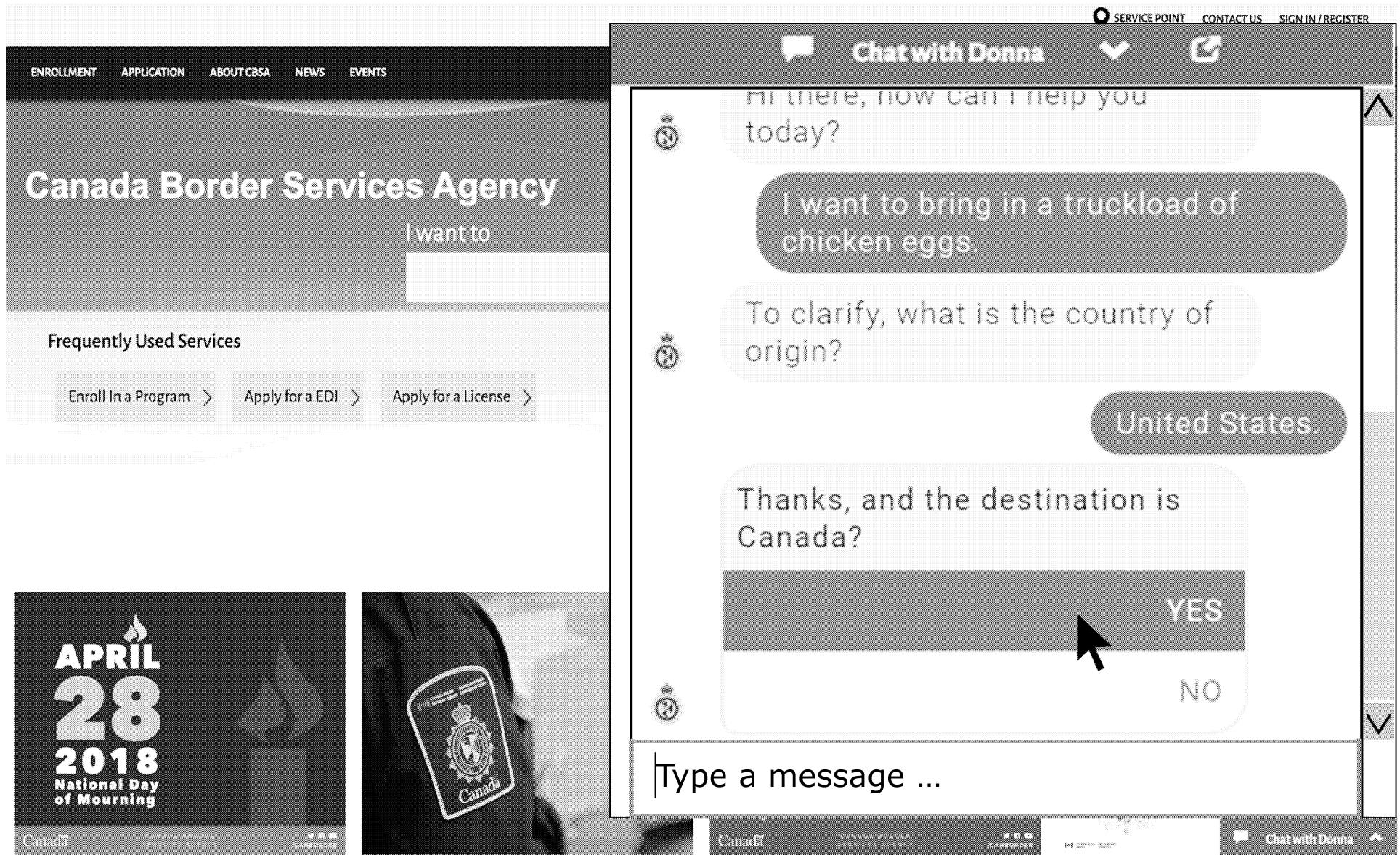
## PROTOTYPE THE SOLUTION





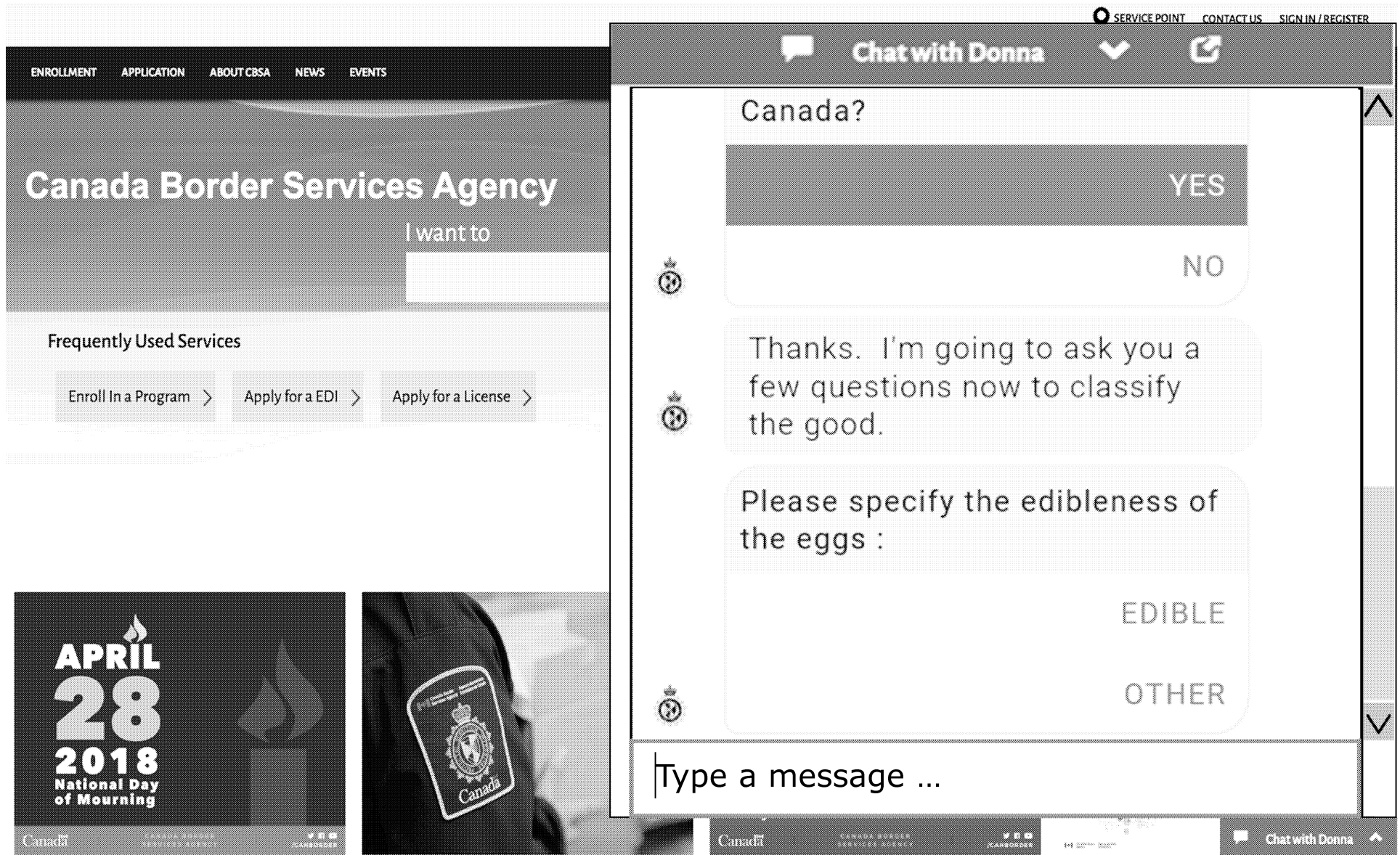
**DRAFT**

## PROTOTYPE THE SOLUTION



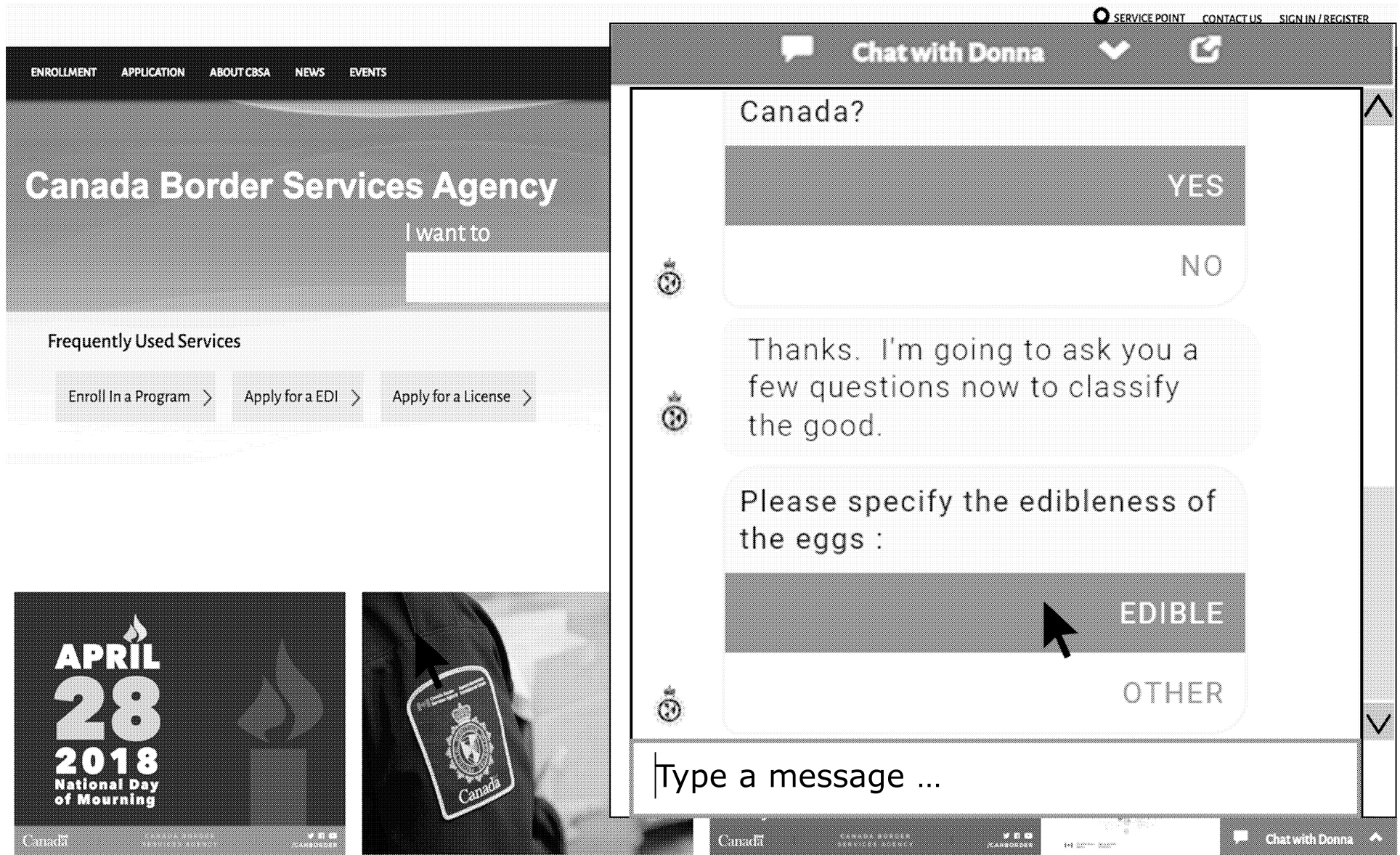
**DRAFT**

## PROTOTYPE THE SOLUTION



DRAFT

## PROTOTYPE THE SOLUTION





DRAFT

## PROTOTYPE THE SOLUTION

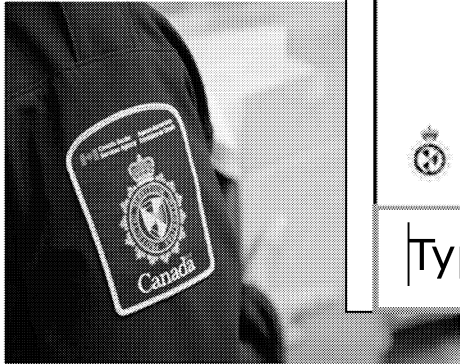

ENROLLMENTAPPLICATIONABOUT CBSANEWS EVENTS

# Canada Border Services Agency

I want to

### Frequently Used Services

Enroll In a Program >Apply for a EDI >Apply for a License >



Chat with Donna

Thanks. I'm going to ask you a few questions now to classify the good.

Please specify the edibility of the eggs :

EDIBLEOTHER

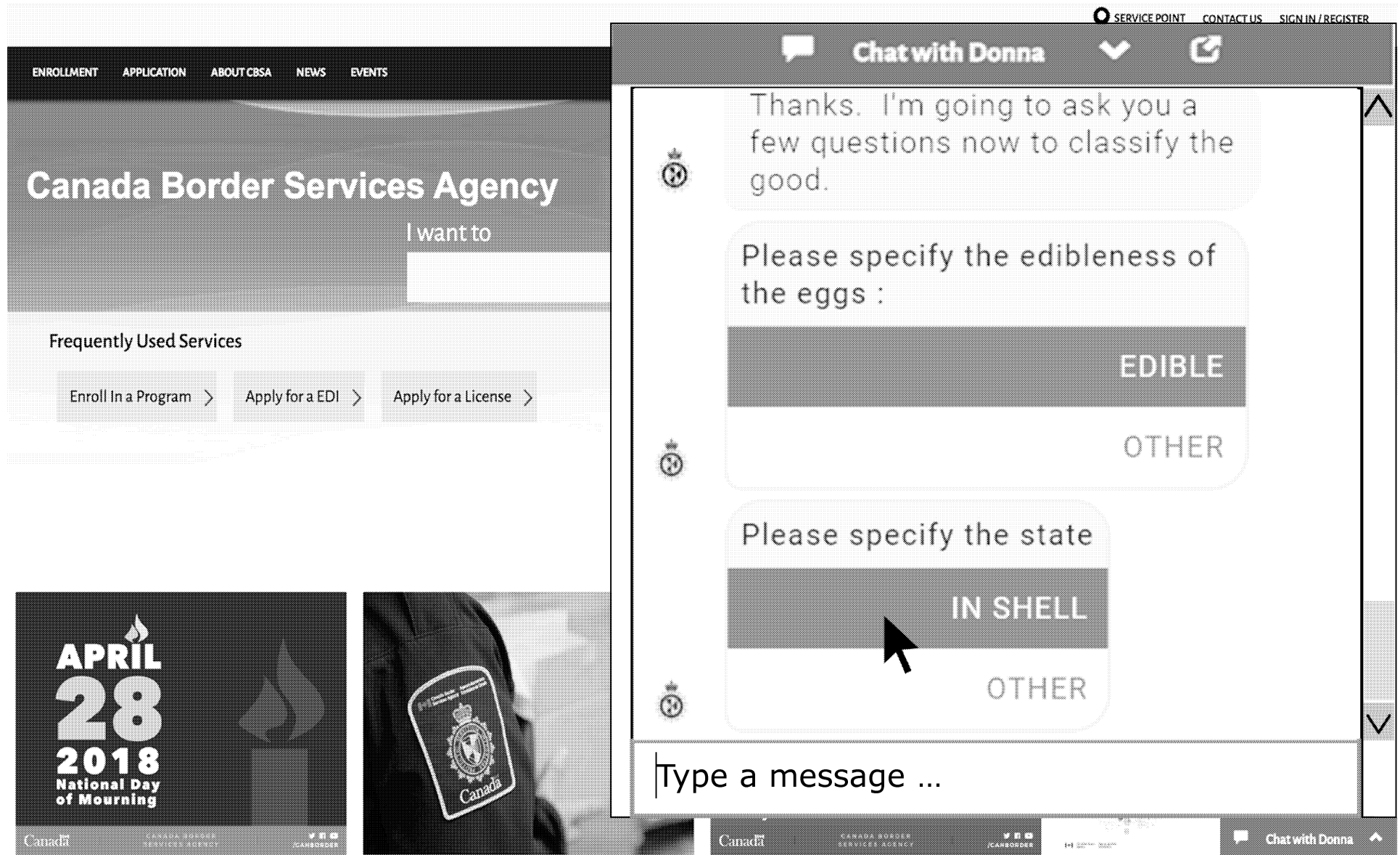
Please specify the state

IN SHELLOTHER

Type a message ...

DRAFT

## PROTOTYPE THE SOLUTION



**DRAFT**

## PROTOTYPE THE SOLUTION

**DRAFT**

## PROTOTYPE THE SOLUTION

The image displays a website prototype for the Canada Border Services Agency (CBSA) with a chat interface overlay. The website header includes navigation links: ENROLLMENT, APPLICATION, ABOUT CBSA, NEWS, and EVENTS. The main heading is "Canada Border Services Agency" with a sub-header "I want to" and a search bar. Below this, a section titled "Frequently Used Services" contains three buttons: "Enroll In a Program >", "Apply for a EDI >", and "Apply for a License >". At the bottom left, there is a banner for "APRIL 28 2018 National Day of Mourning" and a photo of a CBSA officer's uniform patch. The chat interface, titled "Chat with Donna", is overlaid on the right side. It shows a message from Donna: "is a food item that it may have special requirements or permits that need to be satisfied before importation. For more information please visit the Canadian Food Inspection Agency (CFIA)." Below the message is a button labeled "VISIT CFIA WEBSITE". The chat also includes a follow-up question: "Is there anything else I can help you with today?" with "YES" and "NO" response buttons. At the bottom of the chat is a text input field labeled "Type a message ...". The website footer includes the Canada logo, "CANADA BORDER SERVICES AGENCY", and social media links for Twitter (@CANBORDER) and Facebook (/CANBORDER).

ENROLLMENT APPLICATION ABOUT CBSA NEWS EVENTS

# Canada Border Services Agency

I want to

Frequently Used Services

Enroll In a Program > Apply for a EDI > Apply for a License >

APRIL 28 2018 National Day of Mourning

Canada BORDER SERVICES AGENCY /CANBORDER

Chat with Donna

is a food item that it may have special requirements or permits that need to be satisfied before importation. For more information please visit the Canadian Food Inspection Agency (CFIA).

VISIT CFIA WEBSITE

Is there anything else I can help you with today?

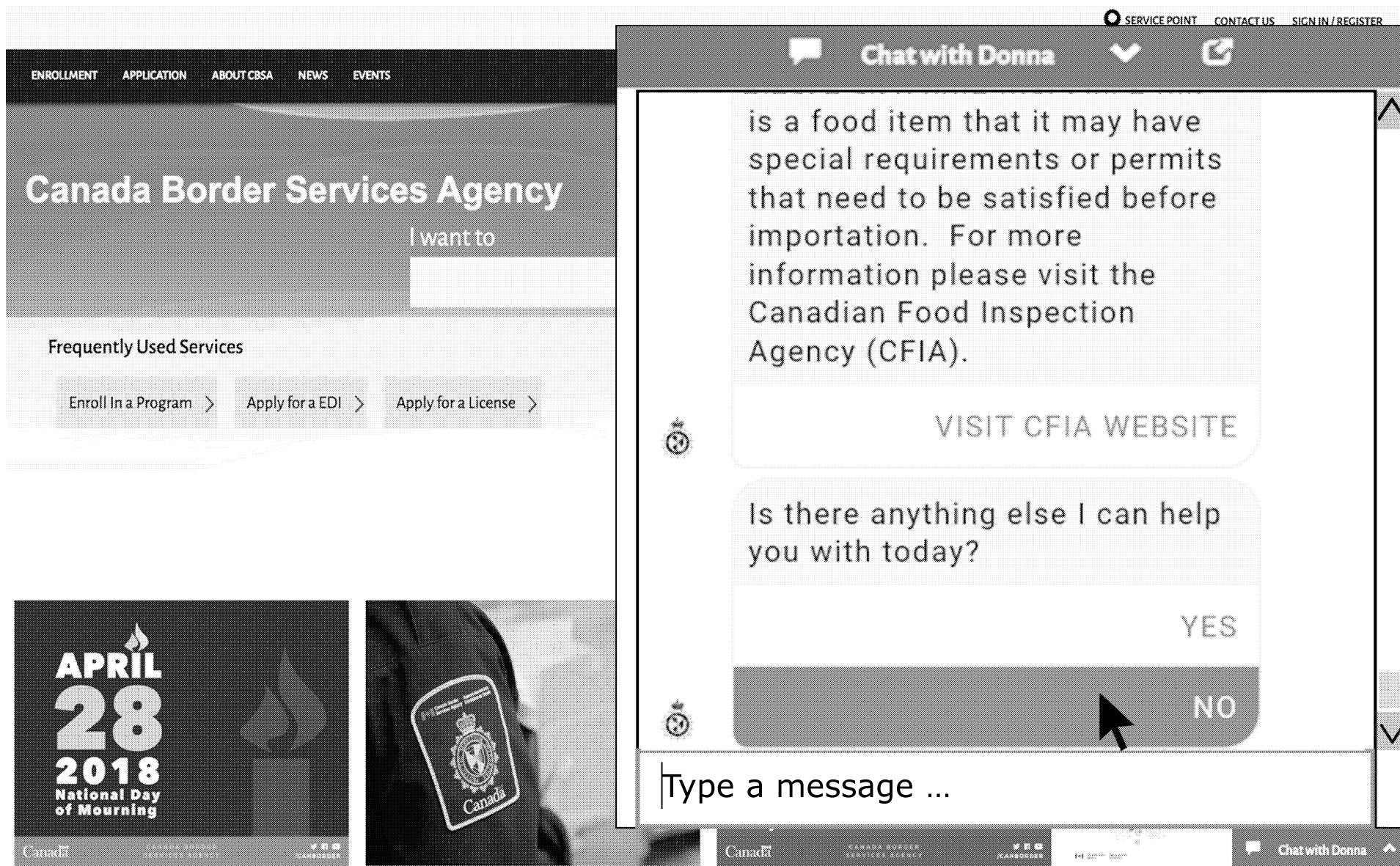
YES NO

Type a message ...

Canada BORDER SERVICES AGENCY /CANBORDER

**DRAFT**

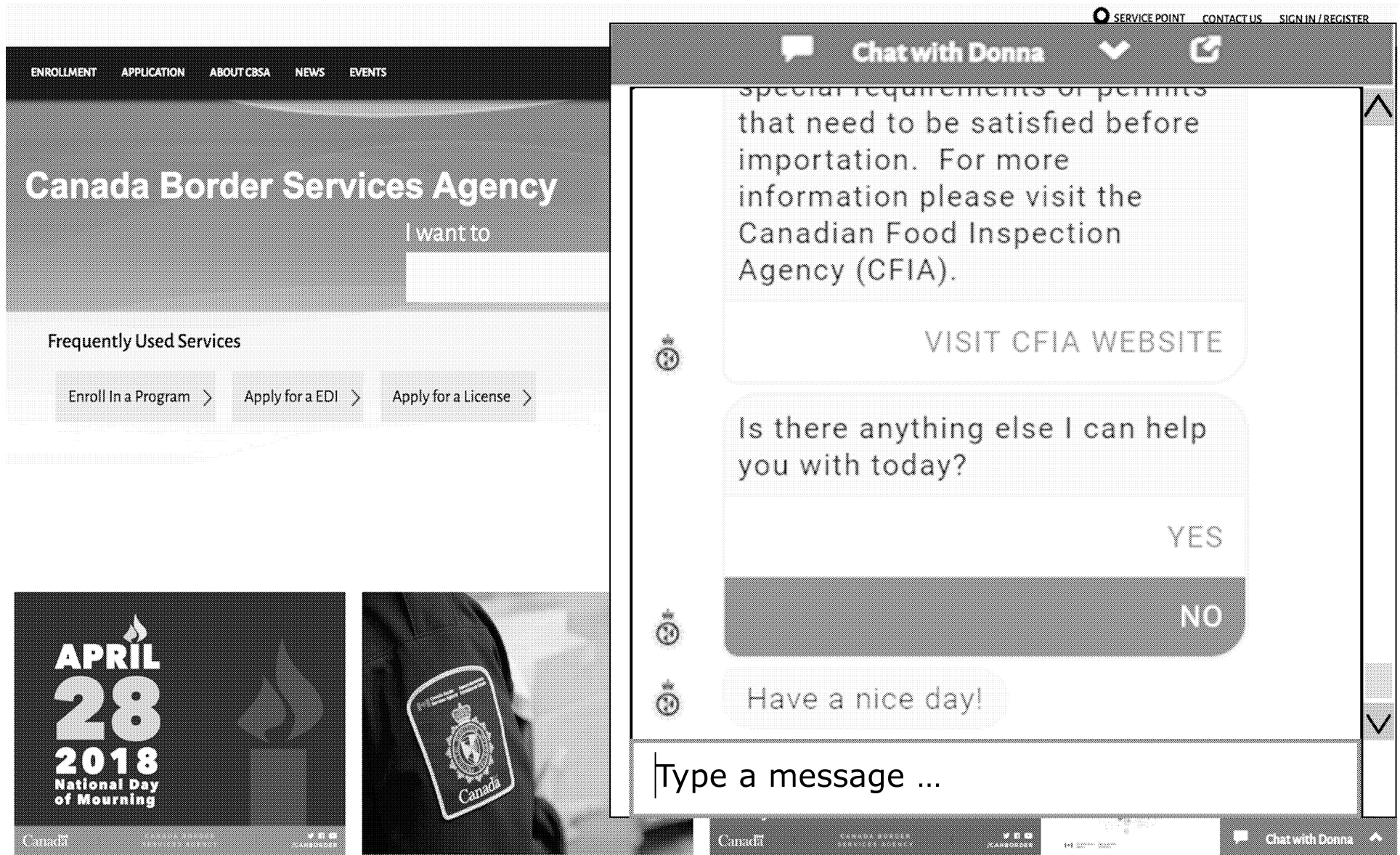
## PROTOTYPE THE SOLUTION





**DRAFT**

## PROTOTYPE THE SOLUTION

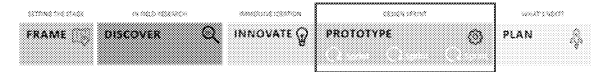


# Prototype the Solution

## *Beyond the Proof of Concept*

**DRAFT**

## PROTOTYPE THE SOLUTION



# A chatbot would support and integrate into the CARM solution in a number of ways, including enabling expedited transactions

The list below provides some example tasks a chatbot could be configured to help users with when accounts are authenticated or non-authenticated (i.e., FAQ-type questions):

### General importation questions:

What is the status of the custom ruling on Buffalo Jerky?

What HS code do I use to classify an electric toothbrush?

How do I register as an importer?

What will the taxes & duties be on my goods?

Where do I go to get help with EDI?

### Account specific questions:

I need to change the BN on a client declaration.

I want to appeal an AMP that was posted onto my account.

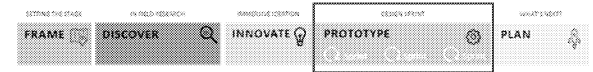
What's the status on my SOA?

What's the status on my refund I requested?

Can you confirm you received the payment?



**DRAFT**



## PROTOTYPE THE SOLUTION

# A chatbot could interact directly with trade chain partners through their mobile devices

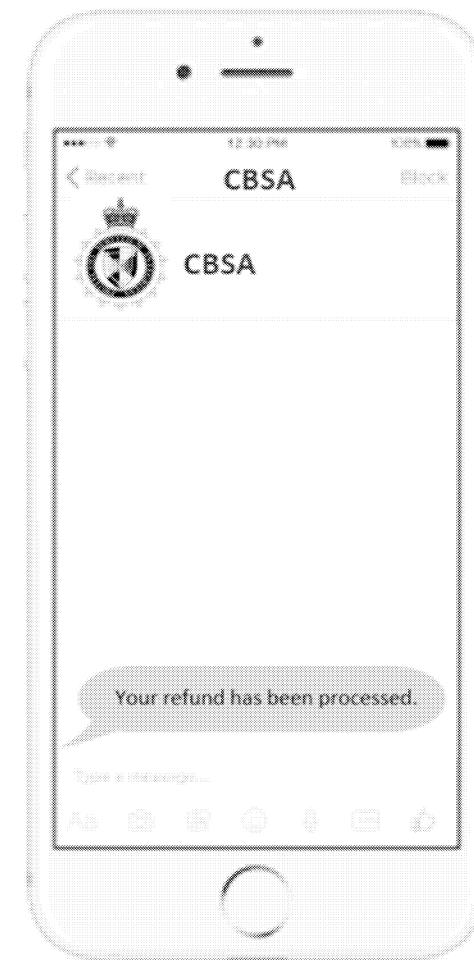
Along with integrating into the CARM portal, a chatbot could interact with trade chain partners directly through their mobile devices for instant access while on the go and provide **push notifications** from CARM to trade chain partners.

Your refund has been processed.

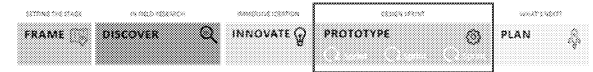
Your account has been penalized due to late payment.

Your declaration could not be processed.

You are approaching your security limit.



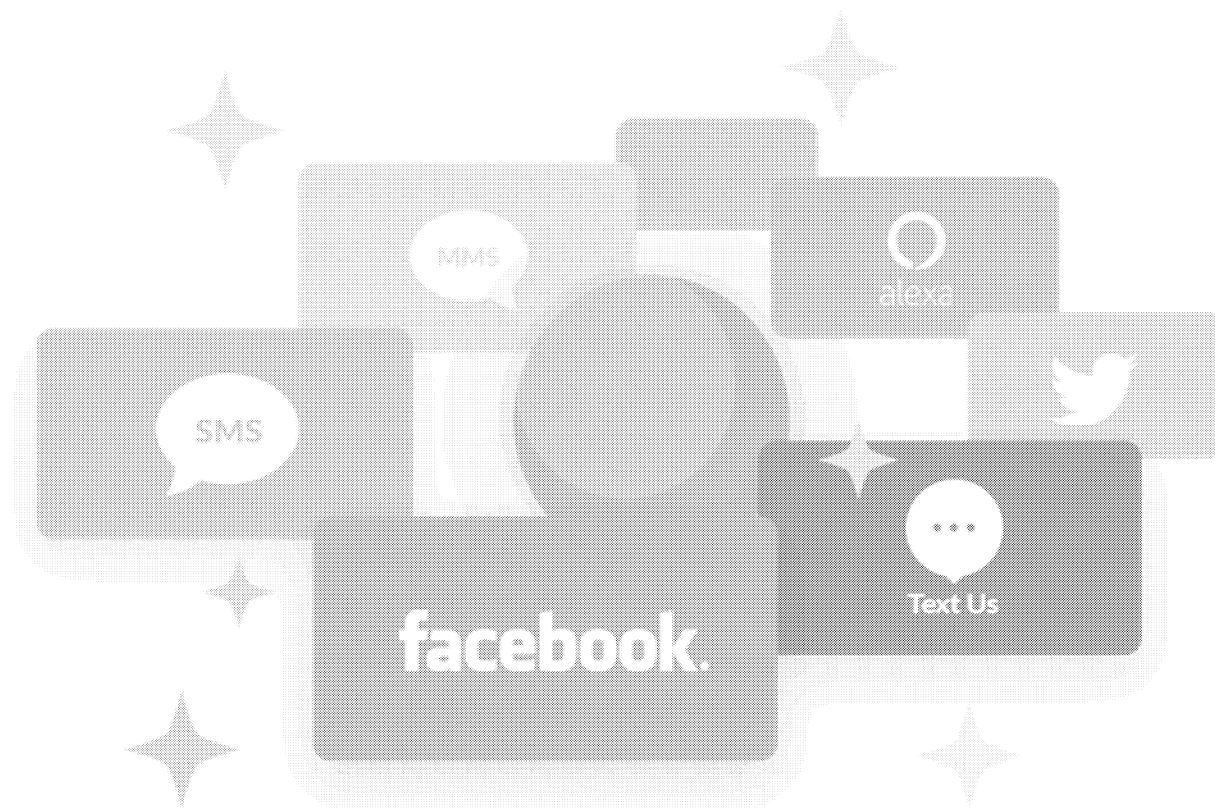
**DRAFT**



## PROTOTYPE THE SOLUTION

A chatbot can be deployed across several different platforms in order to best meet importer/ broker needs

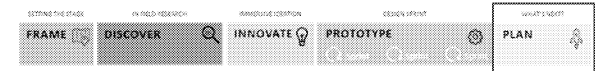
Chatbots will be used more when they are made available in as many places as possible. With minimal deployment effort the same bot can live in many different platforms at the same time.



# Plan for Launch & Scale

**DRAFT**

## PLAN FOR LAUNCH & SCALE



# The chatbot proof of concept will demonstrate the value and impact of the solution

### In Scope

- Setup of 1 non-production environment to host the proof of concept (POC)
- Creation of mocked data which is based on (masked) production data
- Configuration of **a single scenario** used by front line staff into chatbot tool (based on interviews with BIS, TCCU and FASP)
- Demonstration of chatbot POC to key CARM stakeholders and – provide opportunity to address technical / business related questions that surface from the POC
- Creation of executive summary to document key findings, outcomes, risks, issues, and next steps

### Out of Scope

- Live integration of the chatbot into the CARM backend.
- Embedding of chatbot into the conceptual CARM portal.

### What is Needed from CBSA?

1

#### Provide Business Context

Provide background and context around the selected user scenario so that project team can properly train and configure the solution to meet expected results.

2

#### Participate in Meetings

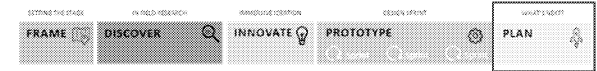
Delegate key stakeholders to act as participants in workshops / working groups to identify relevant questions to ask the chatbot, confirm user scenarios, and make decisions on behalf of CARM.

3

#### Support Testing of POC

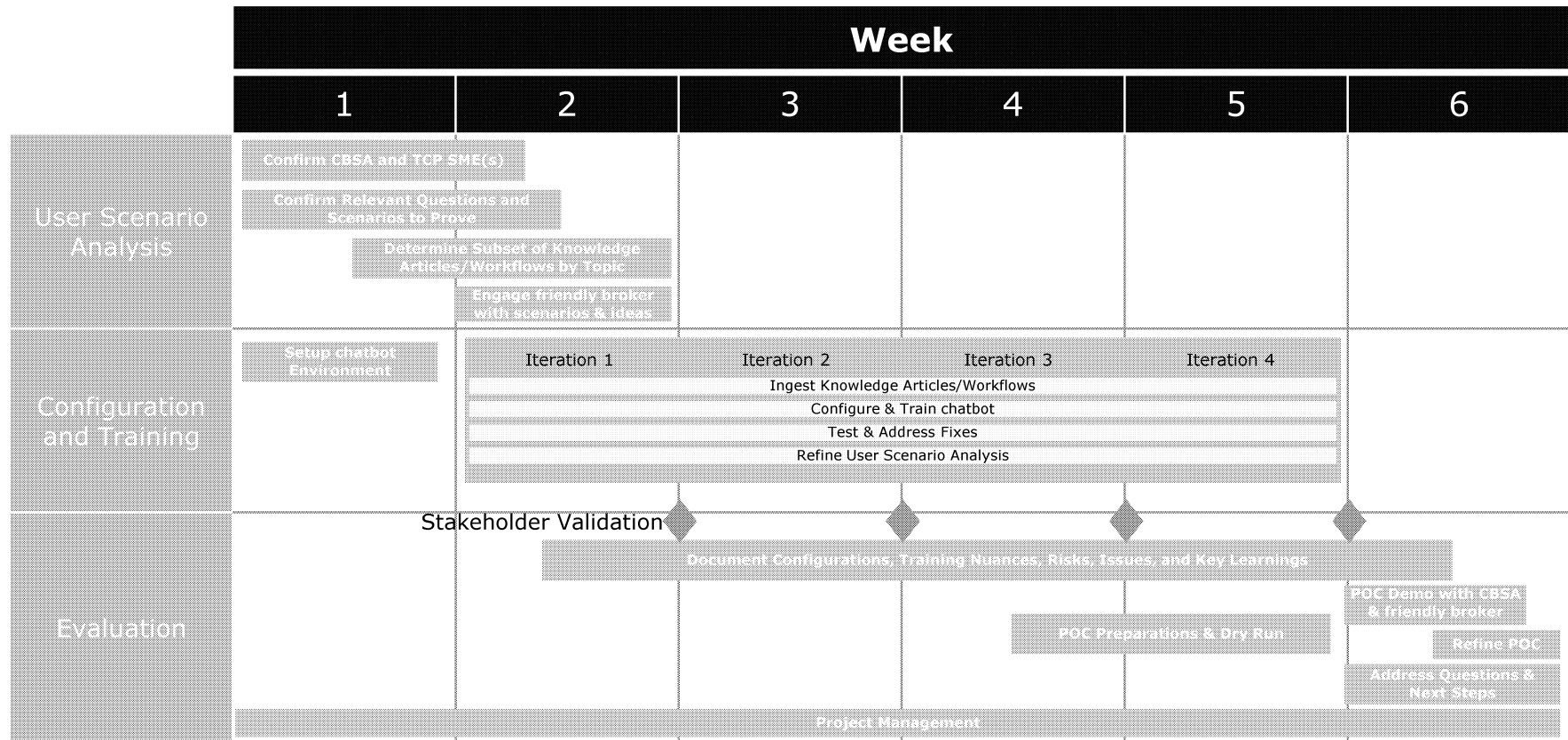
Provide staff to assist with testing the solution from a business end users perspective and identify potential issues / defects to address. Validate the accuracy of various documents being produced.

**DRAFT**



## PLAN FOR LAUNCH & SCALE

The proof of concept will adopt Agile principles in order to deliver value in a timely manner

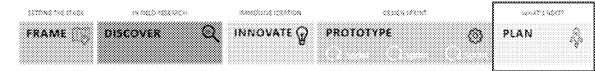


### Key Deliverables

- Configured and Trained POC Solution for knowledge Articles / Workflows In-Scope
- Documentation of POC User Scenarios / Questions to Prove
- POC Test Cases & Result
- High Level Analysis of Full Implementation Effort and Approach
- Executive Summary for POC Outcomes, Key Findings, and Next Steps

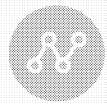
DRAFT

## PLAN FOR LAUNCH & SCALE



# The benefits of the chatbot are aligned closely with the core CARM mandate

### GUIDING PRINCIPLES



**Simplify the Commercial Process.** Streamline the importation declaration and release processes for legitimate trade, by leveraging new technology and reducing administrative burden at the border

The chatbot will enable TCPs to get answers to their questions quickly and easily

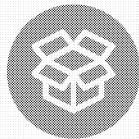


**Improve client identity management and commodity identification.** Enhance the identification of Trade Chain Partners (TCPs) and imported goods to improve pre-arrival risk assessment and targeting activities

The chatbot will be able to answer authenticated questions, and has potential to be leveraged to improve pre-arrival activities

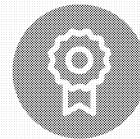
### CARM OBJECTIVES

**MODERN – A fully digital commercial continuum incorporating self-service functionality for clients**



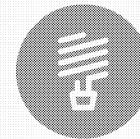
Users can seek information from one source, and inquire about both authenticated and non-authenticated inquiries

**TRANSFORMED – A re-engineered, highly efficient business operation enabled by technology**



The chatbot will significantly reduce effort required for the three current CBSA contact options (BIS, TCCU, and FASP)

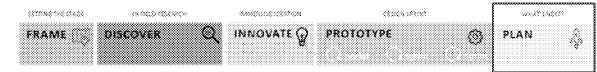
**INNOVATIVE – A capability to respond to evolving client and marketplace needs and trends**



According to Gartner research, approximately 85% of client interactions will be managed without a human by 2020

**DRAFT**

## PLAN FOR LAUNCH & SCALE



In order to move the chatbot POC to the next phase, a few key steps need to be completed

- Gain approval for resources to move forward with POC
- Establish POC team, including relevant CBSA SME(s)
- Confirm relevant questions and scenarios to prove
- Setup chatbot environment



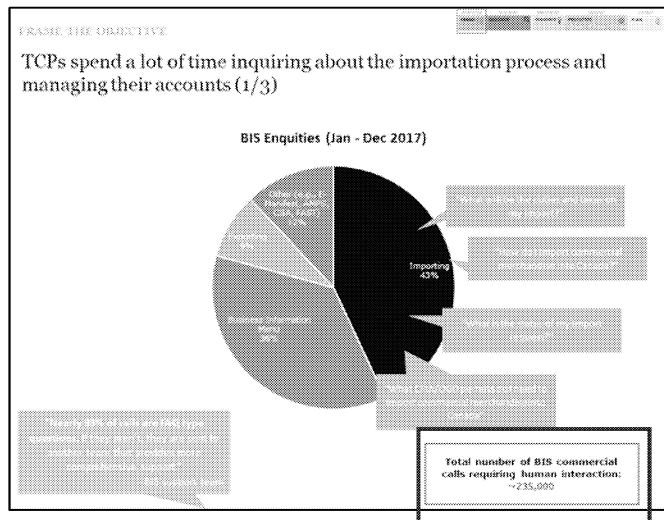
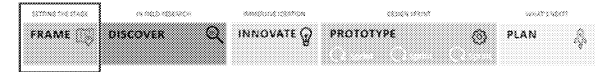
# Appendix

# Appendix A: Benefit Calculations – BIS

DRAFT

## APPENDIX

### BIS data (1/4)

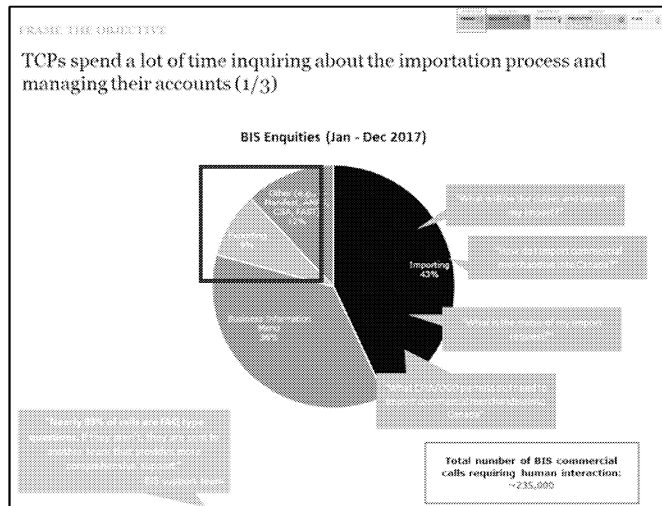
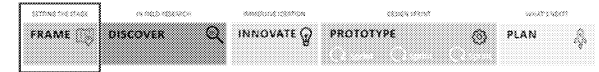


- Based on Suzanne's input on the Workflow Action Activity Report (WAAS *with Summary and Details Jan – Dec 2017 Monthly.pdf*), summarized the number of monthly calls received by BIS for business information (commercial) related inquiries. The summarized data included the total number of calls for each option within the business information menu. Determined that a total number of **340,481** calls were received by BIS for commercial inquiries, between January and December 2017 (note: this 340,481 does not distinguish between calls where human interaction is needed vs not)
- Based on the BIS Phone Monthly Stats file (*BIS Phone Monthly Stats\_Fiscal Year 2016 - 2017 2017 - 2018\_v3.03.xlsx*), it was determined that BIS received a total of **657,788** in 2017 including both traveler and commercial inquiries
- Based on the above data, it was determined that roughly **50%** of BIS calls are commercial inquiries ( $340,481 / 657,788 \approx 50\%$ )
- As per the BIS Phone Monthly Stats file, BIS treats a total of **303,336** calls in tier 1, and **79,336** in tier 2. Both require CBSA employees interaction. Assuming that 50% of the tier 1 tickets are commercial, and **90%** of tier 2 are commercial (based on a discussion with Suzanne where she mentioned that most tier 2 tickets are commercial), it was determined that BIS treats approximately **151,668** commercial tickets in tier 1, and **71,402** in tier 2 for a total of **223,070** tickets requiring CBSA employees interaction

DRAFT

## APPENDIX

### BIS data (2/4)

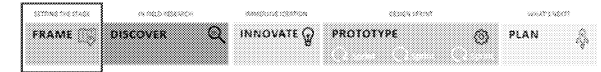


- The other category includes the following categories (with their related % of total volumes):
  - CSA, FAST, PIP, API/PNR (7.7%)
  - The Administrative Monetary Penalty System (AMPS) (0.5%)
  - Commercial Transporter Obligations (0.6%)
  - eManifest (3.1%)

DRAFT

## APPENDIX

# BIS data (3/4)



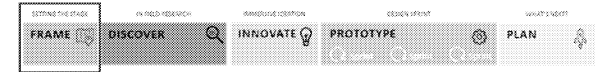
| High end (assumes 100%)  |                 |
|--|-----------------|
| Total commercial calls requiring human interaction                                   | 223,070         |
| Minutes of calls (assuming 10 min per call)  | 2,230,704       |
| Days of calls  | 4,957           |
| Days of commercial calls per FTE (Assuming 65 FTE)                                   | 156             |
| Total FTE required to handle the calls (assuming 252 days of work a year)            | 19.7            |
| Total possible savings   | \$ 1,967,111.11 |
| Total commercial emails  | 12,067          |
| Minutes of emails (assuming 10 min / email)  | 120,669         |
| Days of emails   | 268             |
| Days of commercial emails per FTE  | 8               |
| Total FTE required to handle the emails (assuming 252 days of work a year)           | 1.1             |
| Total possible savings   | \$ 106,409.61   |
| Total commercial calls and emails  | 235,137         |
| Minutes of calls and emails (assuming 10 min / email)                                | 2,351,373       |
| Days of calls and emails   | 5,225           |
| Days of commercial calls and emails per FTE  | 163             |
| Total FTE required to handle the calls and emails (assuming 252 days of work a year) | 20.7            |
| Total possible savings   | \$ 2,073,520.72 |

- Based on the BIS E-Mail Monthly Statistics file (2017-18 BIS E-Mail Monthly Statistics), it was determined that BIS received a total of **22,754** emails in 2017. Assuming that commercial inquires represent **50%** of Tier 1 emails, **90%** of Tier 2 emails and **95%** of HQ emails (% based on conversation with Suzanne), it was determined that a total of **12,067** commercial emails were received by BIS in 2017
- Assuming that **100%** of calls and emails can be answered by a chatbot
  - 235,137** calls and emails are handled yearly
  - 2,351,373** minutes are required to handle the questions (235,137 calls/emails \* 10 minutes per call/email). (Assumed 10 minutes per call)
  - 5,225** days are required to handle the questions (2,351,373 minutes / 60 minutes / 7.5 hours of work per day)
  - 163** days are required per FTE to handle the questions (5,225 / 32 FTE) – 65 FTEs is the total FTE (commercial + traveler) based on conversation with Suzanne. Assumed that 50% of them work on commercial questions only
  - 20.7** FTEs are required to handle the questions in total (5,225 days required to handle the questions / 252 working days per year)
  - Potential savings of **\$2,073,520** if **100%** of the calls and emails can be answered by a chatbot

DRAFT

## APPENDIX

# BIS data (4/4)



| Low end (assuming 50%)  |               |
|---|---------------|
| Total commercial calls requiring human                                    | 111,535       |
| Minutes of calls (assuming 10 min per call)                               | 1,115,352     |
| Days of calls   | 2,479         |
| Days of commercial calls per FTE (Assuming 65 FTE)                        | 77            |
| Total FTE required to handle the calls (assuming 252 days of work a year) | 9.8           |
| Total possible savings  | \$ 983,555.56 |

|  |              |
|--|--------------|
| Total commercial emails  | 6,033        |
| Minutes of emails (assuming 10 min / email)                                | 60,334       |
| Days of emails   | 134          |
| Days of commercial emails per FTE  | 4            |
| Total FTE required to handle the emails (assuming 252 days of work a year) | 0.5          |
| Total possible savings   | \$ 53,204.81 |

|  |                 |
|--|-----------------|
| Total commercial calls and emails  | 117,569         |
| Minutes of calls and emails (assuming 10 min /)                                      | 1,175,686       |
| Days of calls and emails   | 2,613           |
| Days of commercial calls and emails per FTE  | 82              |
| Total FTE required to handle the calls and emails (assuming 252 days of work a year) | 10.4            |
| Total possible savings   | \$ 1,036,760.36 |

- Assuming that **50%** of calls and emails can be answered by a chatbot
  - 117,569** calls and emails are handled yearly
  - 1,175,686** minutes are required to handle the questions (235,137 calls/emails \* 10 minutes per call/email).
  - 2,613** days are required to handle the questions (2,351,373 minutes / 60 minutes / 7.5 hours of work per day)
  - 82** days are required per FTE to handle the questions (5,225 / 32 FTE) – 65 FTEs is the total FTE (commercial + traveler) based on conversation with Suzanne. Assumed that 50% of them work on commercial questions only
  - 10.4** FTEs are required to handle the questions in total (5,225 days required to handle the questions / 252 working days per year)
  - Potential savings of **\$1,036,760** if 50% of the calls and emails can be answered by a chatbot

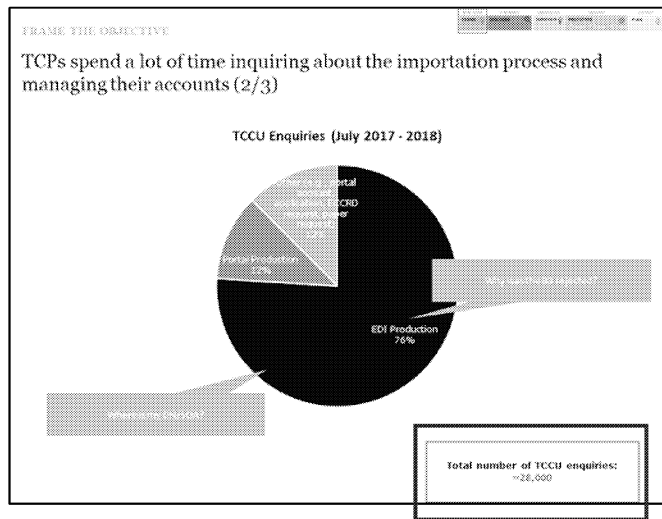
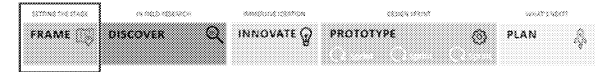
# Appendix B: Benefit Calculations – TCCU



DRAFT

## APPENDIX

# TCCU data (1/2)

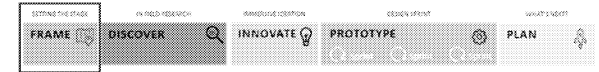


- Based on the data provided by Rick Stark, we took the total number of enquiries from the ECU (26,143) and TSU (1,550) teams, which have us **27,693** total enquiries to the TCCU team between July 2017-2018
- The other category includes the following issue categories (with their related % of total volumes):
  - Application (1.6%)
  - Barcode testing (0.4%)
  - Bulletin request (0.2%)
  - Distribution list (1.0%)
  - ECCRD request (1.3%)
  - EDI account (0.9%)
  - Other (2.1%)
  - Outage (0.4%)
  - Paper request (1.3%)
  - Portal account (2.3%)
  - Set aside (0.004%)
  - Testing (.9%)

DRAFT

## APPENDIX

# TCCU data (2/2)



- Based on a discussions, it was determined that 9 FTEs work in TCCU answering calls / handling tickets
- Assuming that **50%** of calls and emails can be answered by a chatbot
  - 4.5 FTE** time could be fulfilled by a chatbot
  - Assuming an annual salary of **\$100,000**, the total savings by a chatbot is approximately **\$450,000**
- Assuming that **25%** of calls and emails can be answered by a chatbot
  - 2.25 FTE** time could be fulfilled by a chatbot
  - Assuming an annual salary of **\$100,000**, the total savings by a chatbot is approximately **\$225,000**

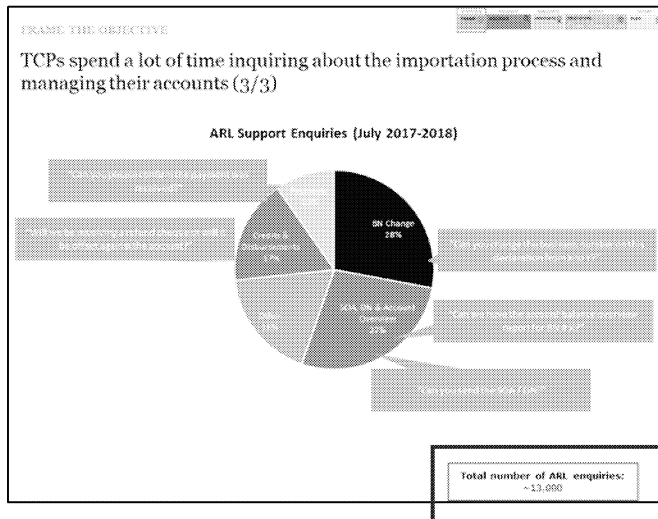
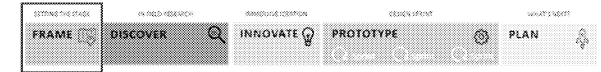
|  |            |
|--|------------|
| High end (assumes 50%)                                       |            |
| Total number of FTEs   | 9          |
| % of volume of enquiries that could be replaced by a chatbot | 50%        |
| FTE time that could be fulfilled by a chatbot                | 4.5        |
| Salary of average FTE  | \$ 100,000 |
| Total savings by a chatbot                                   | \$ 450,000 |
| High end (assumes 25%)                                       |            |
| Total number of FTEs   | 9          |
| % of volume of enquiries that could be replaced by a chatbot | 25%        |
| FTE time that could be fulfilled by a chatbot                | 2.25       |
| Salary of average FTE  | \$ 100,000 |
| Total savings by a chatbot                                   | \$ 225,000 |

# Appendix C: Benefit Calculations – FASP

DRAFT

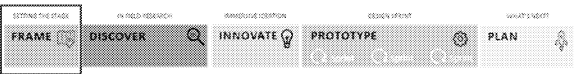
## APPENDIX

# FASP data (1/3)



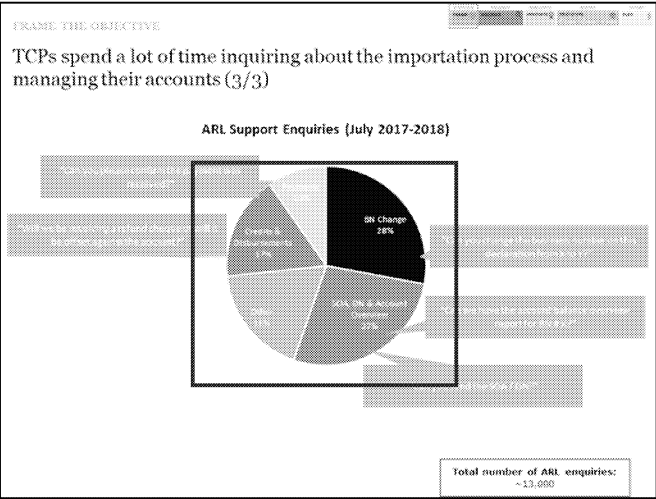
- Total tickets/enquiries were provided by Barbara in a screenshot of a pie chart, providing us with the types of enquiries (FASP labels) and the volume of tickets per label
- KBAs were removed (based on Aran and Barb's recommendations). Note: some of the "other" category may include KBAs, given that we were only provided with the first 39 rows of the table.
- The total from the pie chart components was used as the total number of enquiries (representing the number of labels, assuming this is the number of issues).
- The 'other' row in the raw data is calculated by taking the total from the pie chart, subtracting the KBAs, then subtracting the total of the remaining 29 rows provided.
- "Credit" label FASP label as divided into two (half allocated to each category) to Payment and Credit & Disbursement since we were told by Barb that these enquiries could fall under either
- The original FASP labels were assigned parent labels to bubble up to a higher level – refer to table categorizing

DRAFT



APPENDIX

FASP data (2/3)



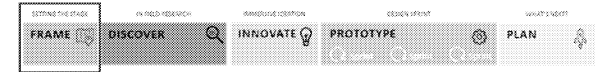
- The original FASP labels were assigned parent labels to bubble up to a higher level – refer to table categorizing:

| Assigned Parent Label      | Original FASP Label |
|----------------------------|---------------------|
| BN Change                  | BN Change           |
|                            | Disbursement        |
|                            | Refund Breakdown    |
|                            | Refund              |
|                            | Cheque              |
|                            | Credit              |
|                            | Drawback            |
|                            | Cheque_Breakdown    |
|                            | Disbursement/Offset |
|                            | Overdue_Releases    |
| Other                      | Broker_Tag          |
|                            | Other               |
|                            | Payment             |
| Payments                   | Correction          |
|                            | Cheque              |
|                            | Epayment            |
|                            | Payments            |
|                            | Overview            |
|                            | Document Status     |
| SOA, DN & Account Overview | DN_SOA              |
|                            | Access              |
|                            | SOA                 |
|                            | Status              |
|                            | Password            |
|                            | Registration        |
|                            | Inquiry             |
|                            | Doument_Change      |
|                            | Missing_Transaction |
|                            | Balance             |

DRAFT

## APPENDIX

# FASP data (3/3)



- 8 FTE working in the FASP group answering enquiries – provided by Barbara and Chris
- Assuming that **75%** of calls and emails can be answered by a chatbot
  - 6 FTE time could be fulfilled by a chatbot
  - Assuming an annual salary of **\$100,000**, the total savings by a chatbot is approximately **\$600,000**
- Assuming that **25%** of calls and emails can be answered by a chatbot
  - 2 FTE time could be fulfilled by a chatbot
  - Assuming an annual salary of **\$100,000**, the total savings by a chatbot is approximately **\$200,000**

| High end (assumes 75%)                                       |            |
|--|------------|
| Total Number of FTEs   | 8          |
| % of volume of enquiries that could be replaced by a chatbot | 75%        |
| FTE time that could be fulfilled by a chatbot                | 6          |
| Salary of average FTE  | 100,000.00 |
| Total savings by a chatbot                                   | \$ 600,000 |

| Low end (assumes 25%)  |            |
|--|------------|
| Total Number of FTEs   | 8          |
| % of volume of enquiries that could be replaced by a chatbot | 25%        |
| FTE time that could be fulfilled by a chatbot                | 2          |
| Salary of average FTE  | 100,000.00 |
| Total savings by a chatbot                                   | \$ 200,000 |

*\*Please note that the FASP team voiced concerns in terms a chatbot having the ability to answer the types of complex, account specific questions they receive*

© Deloitte LLP and affiliated entities.



# Helios



## AI 4 Leg, Regs, Policies Prototype Tool

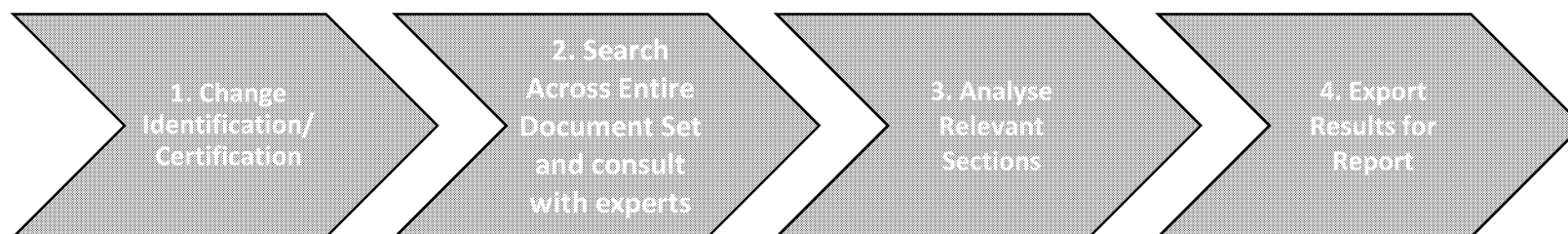
**Business Case**  
**August 2019**

t

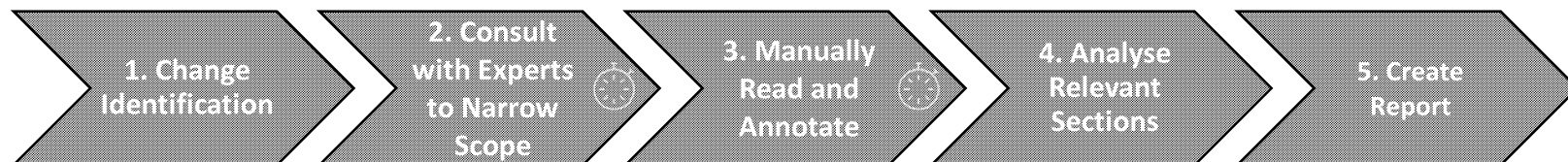
**CARM** | CBSA Assessment and  
Revenue Management

# Current vs. AI-powered Workflow

AI-powered [  +  ]










Current [  ]



# Business Case

As the AI prototype tool is a new innovation, we will measure its effectiveness across a number of dimension by comparing the current method to an AI-powered method.

|   |    |   |    |   |    |
|---|---|--|---|--|---|
|   | # OF DOCUMENTS  | TIME SAVED   | COMPLETENESS  | USABILITY  | NEW TOOLS   |
| <br>AI-POWERED | <ul style="list-style-type: none"> <li>~750 total documents ingested</li> <li>Instant search across all documents in real time</li> </ul>             | <ul style="list-style-type: none"> <li>Advanced search capabilities and time saved</li> <li>An example <b>complex query</b> took <b>35 minutes</b> for search, analysis, clean, and extraction (multiple keywords overlaid) across entire document set</li> </ul>  | <ul style="list-style-type: none"> <li>Higher accuracy, and resulting confidence on initial search results and completeness of analysis</li> <li>Better contextual insights</li> <li>Advanced search capabilities</li> </ul>                  | <ul style="list-style-type: none"> <li>Simple, easy to use interface</li> <li>Makes policy documents easy to peruse</li> <li>Both textual and visual search available</li> <li>Sharing</li> </ul>                      | <ul style="list-style-type: none"> <li>Visual Connectivity Graph</li> <li>Thematic Clouds (by topic, by owner)</li> <li>Outdatedness</li> <li>Prescriptivity</li> <li>Readability</li> <li>Faster workflow &amp; collaboration</li> </ul> |
| <br>CURRENT  | <ul style="list-style-type: none"> <li>User based manual or binary search by paper or justice website</li> <li>Scan one document at a time</li> </ul> | <ul style="list-style-type: none"> <li>Search one key word, one document at a time</li> <li>Based on experience, the complex query example would take more than <b>one day</b> to complete (13x more time)</li> <li>Significant <b>time saving of ~ 200 days</b> anticipated based on current usage volume (300 queries/year). See appendix for assumptions</li> </ul> | <ul style="list-style-type: none"> <li>Accuracy based on accuracy of the initial search</li> <li>No contextual insights unless provided by SME</li> <li>No adv. search capabilities. SME's are used to narrow down areas to search</li> </ul> | <ul style="list-style-type: none"> <li>User searches paper, books, or on the Justice website</li> <li>New users would struggle with search capability</li> <li>Search is strictly basic binary search only.</li> </ul> | <ul style="list-style-type: none"> <li>Users would have to custom build new tools using commonly available tools such as MS excel or access.</li> <li>Limited collaboration, typically by paper or by emails</li> </ul>                   |

# Expected Benefits

 **200 days**

**of time saved on searching tasks** per year based on...



**300 queries**

- Estimated based on current usage volume of 50 queries over 2 months
- 50% simple and 50% complex queries
- 13x to 18x time saving per query based on real life examples



**Single user**

- Based on today's focused user group of CARM Program Authority
- **Additional benefit** to be realized when rolled out to **broader user base** (e.g., CARM project team, strategic policy branch, etc.)



**Leg/Regs only**

- Based on time it takes to search through legislative and regulatory documents (143 documents in Helios currently)
- **Significant additional benefit** to be realized when **d-memos** (additional 369 documents), forms, customs notice are considered

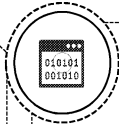
**... allowing policy analysts to focus on the core, value-added analysis**

# What Could Be Next for Helios?



## IMPROVED USABILITY

- Tagging multiple results of a search
- Reporting features and frequently used template
- Auto highlight certain outdated terms, prescriptive terms, and other agencies



## EXPANDED DATA

- Additional legislation and regulations
- Trade Chain Partners
- CBSA internal data sources



## EXPANDED ANALYTICS USE CASES

- Public sentiment analysis
- Entity-centric connection graph visualization
- Visualization of connectivity at section level



## BROADER ROLLOUT

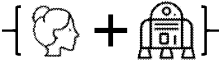

- Multi-user workflow support
- User security and access controls
- Bilingual support

# Discussion

- 1 How would you like to proceed with Helios?
- 2 Would the team like to continue using the tool? Could other areas within CBSA benefit from the tool?



# Appendix – Expected Benefits Assumptions

| ITEM                                      | <br>AI-POWERED  | <br>CURRENT |
|---|--|--|
| Simple query                              | 10 minutes   | 3 hours  |
| Complex/<br>advanced query                | 35 minutes   | > Full day   |
| Annual search volume                      | <ul style="list-style-type: none"> <li>- Annual search volume of <b>300</b><br/>(based on current usage of 50 searches per 2 months)</li> <li>- Assume 150 simple / 150 complex queries</li> </ul> |  |
| Expected time spent on<br>search per year | 113 hours<br>(~15 days)  | 1,575 hours<br>(~210 days)   |

← Example:  
“cash” or “cheque”

← Example: “accounting”  
and “Customs Act” OR  
“accounted for” and  
“Customs Act”